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THE JOURNAL OF LAND & PUBLIC UTILITY ECONOMICS

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THE JOURNAL OF LAND & PUBLIC UTILITY ECONOMICS

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STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912,

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State of Illinois, } ss.
County of Cook }

Before me, a notary public in and for the State and county aforesaid, personally appeared Dora E. Wallendorf, who, having been duly sworn according to law, deposes and says that she is the business manager of the Journal of Land and Public Utility Economics and that the following is, to the best of her knowledge and belief, a true statement of the ownership and management of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

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Sworn to and subscribed before me this 4th day of April, 1931. DORA E. WALLENDORF, *Business Manager.*
(Seal.) EDWARD B. DAVIDSON. (My commission expires, December 24. 1932.)

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Judicial Supervision of Commission Regulation: A Study of Court and Commission Relations in Massachusetts*

By MARY LOUISE RAMSEY

RECENTLY the relation of the courts to the processes of public utility regulation by administrative commissions has been drawn into the periodically revived indictment of commission regulation as ineffective. The role of the courts has always been somewhat uncertain, and to that extent exposed to complaint and counter complaint. Commissions, created by legislatures, have been granted powers resembling those exercised by courts, legislatures, and ministerial officers. Inevitably, the mixture of quasi-judicial, quasi-legislative, and purely ministerial powers and functions has aroused dissension, especially since commission authority, created by legislatures, has extended into realms formerly the sole province of constitutionally created courts, while such courts have the last word by way of review. Working out a modus operandi between the two sometimes rival agencies of government has not been an easy task.

Furthermore, the charge is made that the federal courts have hamstrung state commissions, and that through the influence of federal decisions the state courts in some instances have unduly hampered their commissions.[1] Nevertheless the feeling has prevailed that state courts have been less obstructive and more understanding of local interests and the practical problems of commissions than have the Federal Courts. Thus proposals have been made for forcing utility companies to litigate first in the state courts,[2] and studies have been

* *Editorial Note:* This study of the relations of the Commission to state courts was made as part of a more comprehensive inquiry into the work of the Massachusetts Public Utility Commissions by E. W. Morehouse.

[1] See Frankfurter, "The Distribution of Judicial Power between the United States and State Courts," 13 *Cornell Law Quarterly* 499,515 (June, 1928); *United States Daily*, June 4, 1931, page 3, column 1. Report of *Proceedings of the Conference of the Governors.*

[2] *Report*, Commission on Revision of Public Service Commission Law, New York, 1930.

made of the extent to which Federal Courts have defeated the aims of state legislatures and commissions.[3] In all this ferment of opinion, scant attention has been given to the experience of individual states; little effort has been made to present a complete picture of how the courts of one state have worked out, through a period of years, their proper relationship to the regulatory commission. The present article forms one section of a study of a single state's experience in utility regulation. The work of the Massachusetts Commission has been the focus of this study, but inevitably it became of interest to inquire:

(1) In what fields of regulation has the Court been drawn in?
(2) Has the Massachusetts Court interpreted the Commission's powers strictly or broadly? That is, has the State court aided or hindered the Commission in the performance of its duties?
(3) Have the Court's rulings materially affected the scope and quality of Commission regulation in Massachusetts?

To these inquiries this present section of the larger study has been addressed.[4]

An examination of the State Reports reveals 41 cases in which the Massachusetts Supreme Judicial Court has reviewed or commented upon the action or powers of the Board of Railroad Commissioners, Board of Gas and Electric Light Commissioners, the Public Service Commission, and the Department of Public Utilities.[5] Recently orders of the Department of Public Utilities have been called into question in the Federal District Court for Massachusetts in two instances. These cases in the Federal Court were important in that they threatened the veto of a major policy of the Department, but both were dropped before being finally litigated.

Locations

More than a third of these cases have involved locations for or the use of railroad tracks and pipe lines, construction or abandonment of stations, leases, etc., many of which have little bearing on problems of present day importance. In 14 of these the order of the Board or Commission was upheld and in one reversed.

Under varying circumstances and usually in accordance with specific statutory enactment the Court has affirmed these actions of the Board of Railroad Commissioners as being a proper exercise of its discretionary authority: the location of a railway bridge despite the objection of local authorities;[6] the awards

[3] See Lilienthal, "The Federal Courts and State Regulation of Public Utilities," 43 *Harvard Law Review* 379 (January, 1930).

In footnote 176, page 417 of this article, the writer presents the results of a comparative study of the time consumed by federal and state courts in disposing of appeals from orders of a public utility commission. Of the 41 federal opinions in rate cases which carried the necessary dates, 18 were rendered in six months or less and 28 in a year or less. Of the 32 opinions carrying the necessary dates from state courts, where a commission order is directly appealable to the highest state court, 18 were decided in less than a year, and 27 in less than two years. A similar study for Massachusetts cases reveals that of the 25 showing the necessary dates, 12 were decided in six months or less, 18 in a year or less, 24 in less than two years, and only one in more than two years. The comparison on its face is only slightly favorable to Massachusetts. When it is recalled that there has never been an appeal in Massachusetts to its highest state court on a general rate order, while the cases in Mr. Lilienthal's comparison were rate cases, any apparent advantage becomes debatable.

[4] This study does not include all public utility cases. It includes only those which involved rulings or powers of the Board of Railroad Commissioners, the Board of Gas and Electric Light Commissioners, the Public Service Commission, and the Department of Public Utilities. Cases involving the relation between other administrative bodies, public utilities, and the courts have likewise been omitted.

[5] Throughout this paper these bodies will be referred to as Board, Commission, or Department, respectively.

[6] *Mayor and Aldermen of Worcester v. Board of Railroad Commissioners*, 113 Mass. 161 (1873).

of compensation to one street railway for the use of its tracks by another;[7] the approval of a change in the location of stations as a relocation rather than as an abandonment;[8] the granting to one railroad of the right to use the tracks of another on conditions named;[9] an order requiring a railroad to construct, under specified conditions, crossings for the benefit of grantors whose access to their remaining lands had been cut off by grants to the railroad;[10] the affirmation of an order of the Board of County Commissioners requiring the widening of a street and the lengthening of a railroad bridge;[11] an order approving the extension of a street railway over the tracks of another railway continuous with the first;[12] the approval of an extension of a street railway track despite objection of a physician who maintained a sanitarium, and who contended that the railway would constitute a nuisance[13]; the location of subway and elevated stations to which the local authorities objected;[14] the disapproval, on the ground of public convenience and necessity, of the action of a city council in revoking a street railway's location[15]; the entertainment, before the expiration of a year, of an application for certificate of convenience and necessity after the application had been dismissed at the request of the applicant;[16] the grant of a location in the public highways for the construction of pipe lines.[17]

In only one case belonging in this group did the Court reverse the Board; it was held that under the existing statutes the Board exceeded its powers in permitting another railroad to "take" as well as to "use" land within the location of the complaining railroad, and without fixing the compensation to be paid for the use.[18]

Miscellaneous Cases.

One case[19] merely involved this technical question: under which of two statutes should an appeal be made from an order of the Board of Railroad Commissioners, awarding payment to be made for the use of the Union Station at Worcester?

Another early railroad case raised a question of Commission procedure. A statute imposed a heavy forfeiture on any railroad refusing to transport small quantities of milk at rates determined by the railroad commissioners. A shipper sued to recover such penalty for failure to accept his milk for transportation at rates which had been fixed by the Commission. The Court held that such an order by the Board had the effect of a penal statute; therefore it could be issued only upon complaint against a specific railroad, and after notice and hearing; failure to show such specific notice and hearing rendered the order unenforceable.[20]

[7] *Metropolitan Street Railway Company*, 118 Mass. 290 (1875); *Cambridge Railroad v. Charles River Street Railway Company*, 139 Mass. 454 (1885).

[8] *Attorney General v. Eastern Railroad*, 137 Mass. 45 (1884).

[9] *Providence v. Worcester Railroad*, 138 Mass. 277 (1885).

[10] *New York and New England Railroad v. Board of Railroad Commissioners*, 162 Mass. 81 (1894).

[11] *New England Railroad v. Board of Railroad Commissioners*, 171 Mass. 135 (1898).

[12] *Daniels v. Commonwealth Avenue Street Railway*, 175 Mass. 518 (1900).

[13] *Paine v. Newton Street Railway Company*, 192 Mass. 90 (1906).

[14] *Mayor of Cambridge v. Board of Railroad Commissioners*, 197 Mass. 574 (1908); *Cambridge v. Boston Elevated Railway Company*, 241 Mass. 374 (1922).

[15] *Salem v. Eastern Massachusetts Street Railway*, 254 Mass. 42 (1925).

[16] *Inhabitants of Weston v. Board of Railroad Commissioners*, 205 Mass. 94 (1910).

[17] *Cheney v. Barker*, 198 Mass. 356 (1908).

[18] *Worcester and Nashua Railroad Company v. Board of Railroad Commissioners*, 118 Mass. 561 (1875).

[19] *Boston & Albany Railroad v. Public Service Commission*, 232 Mass. 358 (1919).

[20] *Littlefield v. Fitchburg Railroad Company*, 158 Mass. 1 (1893).

One other early case falls in a class by itself.[21] It turned on the peculiar phraseology of a statute requiring Cambridge and Boston to construct a bridge over the Charles River and giving the Board of Railroad Commissioners supervision over the "details" of the construction. The Court held that the Board exceeded its authority in ordering Cambridge to carry the bridge over an avenue rather than to cross it at grade, because such order involved more than a "detail."

Rates

Ten State cases and two Federal cases have dealt with rates. In the State court seven of the opinions or decisions were favorable to the Board and three unfavorable. The cases in the Federal Court were not finally litigated, and the Board's orders were allowed to stand, but the doctrine of the preliminary decision in the first of these cases was hostile to the Commission's policies.

A pioneer case, *Attorney General* v. *Old Colony Railroad Company*,[22] did not involve any action of the Board of Railroad Commissioners, but contained this interesting remark:

"The Legislature, if it sees fit, can establish rates for each railroad separately, and as different railroads may reasonably require different rates, we see no objection to the statute on the ground that certain railroads are exempt from its provisions. The subject is one in which legislation need not be uniform, and the statute cannot be avoided by one railroad company because it is not applied to another . . . We think that the intention of the statute is that it shall apply to every railroad corporation operating a railroad for the common carriage of passengers within the commonwealth, unless the Board of Railroad Commissioners shall determine on petition, after due hearing, that there is something exceptional in the financial condition of a particular railroad, or in the character of the service which it renders to the public which reasonably requires that railroad to be exempted or excluded from provisions of the statute, leaving such railroad to be separately dealt with by the Legislature as they should deem it necessary. We are not satisfied the statute is unconstitutional on the ground that it contains a delegation of legislative power to the Board of Railroad Commissioners."

Three cases held that street railway fares could be increased with the consent of the Board of Railroad Commissioners or the Public Service Commission, despite a rate-limitation provision in the local grant of location. The conclusion, however, rested on different theories; in the earlier case, *Keefe* v. *Lexington and Boston Railway*,[23] the condition had been inserted in a location granted after the passage of Chapter 578 of the statutes of 1898, which gave the directors of a railroad the right to fix fares subject to the supervision of the railroad commissioners. This condition of the location grant was held to be inconsistent with such statute and therefore unenforceable.

In *Board of Survey of Arlington* v. *Bay State Street Railway Company*[24] the location had been granted before the passage of the above mentioned statute and was therefore originally valid. But the Court held that, in granting these locations, the selectmen were acting as agents of the State and not of their respective municipalities; it followed that these limitations could be waived by the Legislature; chapter 784 of the statutes of 1913, which vested general control of fares in the Public Service Commission, was interpreted to constitute such a waiver, and these franchise limitations were unenforceable. The Court refused to express an opinion as to whether or not the railroad could

[21] *Cambridge v. Board of Railroad Commissioners*, 153 Mass. 161 (1891).

[22] 160 Mass. 62 (1893).

[23] 185 Mass. 183 (1904).

[24] 113 N. E. 273 (1916).

enforce the contract rates against the State, saying:

" . . . it is not necessary to determine what would be the effect of a reduction of fares against the protests of the street railway company.

"This record simply presents a case where the original act of the state performed by the selectmen in granting a location to the street railway has been modified in respect of fares by the state, speaking through the paramount power of the Legislature, and that modification has been accepted by the street railway company. No one else can complain."

This case is important, however, in marking the passing of local authority from this field and the vesting of entire control in the state regulatory commission.

Fall River v. *Public Service Commission*[25] followed the Arlington case in holding that under the 1913 statute street railway fares could be increased in spite of limitations in the grant of location. The Board had fixed a 10-cent cash fare with 5 tokens for 35 cents. This was attacked in a later case between these same parties[26] as illegally making these tokens legal tender. The Court summarily denied the argument and affirmed the order.

An interesting and controversial question was presented in *Donham* v. *Public Service Commission*.[27] During the World War a street railroad had gone into receivership, and the receiver filed a schedule of increased fares. The Commission ordered a schedule reflecting smaller increases, in spite of the fact that both parties admitted that under any schedule it was impossible for the company to earn a fair return. The Commission believed that under the lower rates the revenue would not be substantially less than under the company schedule, because there would be more riding. The Company contended that the Commission had no power to reduce rates while the Company was earning less than a fair return. But the Court upheld the order, saying that abnormal conditions did not suspend the Commission's duty to protect the public interest; this order would be invalid only if it were clear that revenues would be reduced in substantial measure.

It is interesting to read this case in connection with *Federated Civic Clubs* v. *Springfield*,[28] although the two cases are not inconsistent. The Department expressed its opinion in the latter case thus:

"It seemed to be conceded by all at the hearings that the company could not continue its present service without increased revenue. Some believed that the increased revenue could be obtained by a reduction of fares, thus increasing the riding. We dismiss this argument, as experience has demonstrated that it is not the solution . . . We do not think that we are justified in substituting our judgment for that of the officials of the company *unless we are of the opinion that the rates proposed are unreasonably high.*"

That last clause is a reservation by the Department of the power to substitute its own judgment for that of the company in a suitable case. Here, however, it examined the evidence and agreed that the rate proposed by the Company was reasonable.

The Court took a liberal attitude in affirming the order in the Donham case. While the decision is entirely sound, it could well be argued that it was an unwarranted invasion of the rights of management for the Commission to substitute its judgment as to what fares would pro-

[25] 228 Mass. 575 (1917).
[26] 232 Mass. 329 (1919).
[27] 232 Mass. 309 (1919).

[28] P. U. R. 1925 A 127. By this time the effect of automobile and bus competition upon street car traffic and revenues was more pronounced than the jitney competition and abnormal price conditions in the earlier case.

duce the greatest revenue when abnormal conditions made it impossible for the Company to earn a fair return under any schedule of fares. Certainly the Commission should follow the policy announced in the Springfield decision and interfere only in a clear case. In the instant case the Court apparently accepted, without review, the Commission's judgment that this was a proper case for intervention.[29]

In *Boston* v. *The Edison Electric Illuminating Company*,[30] the Mayor of Boston sued to recover for alleged excessive charges paid to the defendant for electric service. The Court denied recovery, holding that the Legislature, in granting to the Department full jurisdiction to determine rates and to invoke the aid of the Court to enforce such rates, had covered the entire field, so that the common law right to go into court and attack rates as excessive no longer existed. There is nothing in the decision either affirming or denying that the Department has any power to order reparations; neither does it decide whether the Court does or does not have jurisdiction to order payment of reparations after the Department has determined that a rate is unreasonable. The statement that the statute had covered the entire field and that the common law remedy no longer existed might be stretched to deny this power in the court, but its application should be confined to the facts in this case. Here the complainant had never sought a determination of the fairness of the rates by the Department of Public Utilities. To permit recovery, the Court would have to find for itself what rates would be reasonable. The question was whether the statute granting to the Department the power to determine reasonable rates took away from the Court the power to pass upon such reasonableness upon complaint of consumers before the Department had acted or had been called upon to act. The Court answered "yes," explaining:

"The Department is given full authority to determine the rates at which electricity shall be sold. If every dissatisfied customer can bring an action at common law, it is obvious that no schedule, as established, could have any degree of uniformity and permanency. A verdict or finding for the plaintiff might imperatively require a complete revision of the scheduled rates so frequently as to unsettle any satisfactory or just administration of the service . . . The Mayor, moreover, could have petitioned for revision of the rates which the city was compelled to pay on the ground that they were excessive and unreasonable . . .If the rates prescribed are exceeded by the defendant the Department on complaint of the violation can . . . institute judicial proceedings for the enforcement of its order. It is to be assumed that the great but well defined powers conferred upon the Department are sufficient to protect those who are dependent upon the defendant for electricity from injustices and abuse.

"The statute, among other provisions, having covered all cases concerning the rates established by the defendant, and made them subject to the power of revision and modification vested in the Department, the plaintiff is confined to its provisions as affording a comprehensive, simple and practical means for redress."

The surrender of judicial regulation to administrative control was fairly complete.

If the Department had already determined that the rate complained of was unreasonable, the question of the recovery of the excess charges would be quite different. The distinction is

[29] It might be noted, however, that the Interstate Commerce Commission followed this same policy when it ordered a horizontal rate reduction of 10% in 1922, despite the fact that the railroads were not earning the fair return to which they were entitled. See D. P. Locklin, *Railroad Regulation Since 1920* (Chicago: A. W. Shaw Co., 1928), pp. 30, 31.

[30] 242 Mass. 305 (1922).

brought out by the decision of the Supreme Court of the United States in *Texas and Pacific Railway Company* v. *Abilene Cotton Oil Company*.[31] This was a suit by a shipper to recover alleged excessive charges from a railroad. The shipper had not complained to the Interstate Commerce Commission and the Commission had not considered the reasonableness or unreasonableness of these rates. In spite of the provision in the Interstate Commerce Act expressly reserving to the shipper his common law rights of action, the Supreme Court denied recovery, interpreting the statute to reserve only such common law rights as were not inconsistent with the powers conferred on the Interstate Commerce Commission. Like the Massachusetts Court, the Supreme Court emphasized the inexpediency of having the court try to determine the reasonableness of rates in many individual suits. Such a practice would conflict with the policy of the act to put the determination of the reasonableness of rates in the hands of the Commission. Therefore, it decided that part of the shipper's common law right had been abrogated because inconsistent with the powers conferred on the Commission, but conceded that the shipper could sue at common law for reparations after the Interstate Commerce Commission had found a rate to be unreasonable.

However, it is not constitutionally necessary for the Legislature to allow any right of reparation. Many of the reasons suggested by the Department of Public Utilities,[32] against the grant of such power to the Department would apply equally to the Courts. Whether or not this power exists is simply a matter of statutory construction not covered by this case. By way of a speculative judgment, we may hazard the guess that the Courts would hold that the Legislature had not intended to allow any right of reparation to consumers of gas, electricity, or water; the basis of this guess is the facts set forth by the Department in its *Report* for 1922.[33] By expressly authorizing reparations for excessive railroad tariffs and refusing to authorize them in the case of gas, water, and electric utilities, some presumption is raised that the Legislature did not intend that there should be any recovery of reparations in the latter case. Of course, these statutes relate to the Department and not to the Court; but the Court probably would not go out of its way to assume this jurisdiction.

This question of reparations is complicated by other problems—for instance, the Missouri Supreme Court has recently held that a statute expressly authorizing the Commission to order reparations is unconstitutional. It reasons that the determination of reasonable rates for the future is a legislative function, but to order one person to make a payment to another on rights growing out of past transactions is judicial; the exercise of such power by the Public Service Commission invades the constitutional requirement of separation of powers and so is unconstitutional.[34]

In *Gurney Heater Manufacturing Company* v. *New York, New Haven and Hartford Railroad*,[35] the Court followed the earlier case in refusing to allow recovery on the common law right when the Commission had not acted. Apparently, however, the Court assumed the validity of the statute expressly authorizing the Department to grant reparation against railroads; the doctrine of separation of powers was not mentioned.

[31] 204 U. S. 426 (1907).

[32] *Annual Report*, 1922, Appendix, p. 51.

[33] *Ibid.*

[34] *State ex rel. v. Public Service Com.* (Mo.), 259 S. W. 445 (1924).

[35] 264 Mass. 427 (1928).

None of the rate cases in which the Department was reversed involved a review of its conclusions as to whether or not a given rate was compensatory. One case turned on a question of discrimination; two, on questions of jurisdiction.

In the case of *National Dock & Storage Warehouse* v. *Boston and Maine Railroad*,[36] the Boston and Maine Railroad absorbed the transfer charges from the Commonwealth Pier and not from the plaintiff's docks. The Commission found this to be discriminatory and ordered the discrimination removed. The Railroad tried to do this by cancelling the absorption of rates from the Commonwealth Pier, but the Supreme Court restrained that cancellation as a violation of a contract with the Commonwealth Pier. Thereafter, the Public Service Commission ordered the Railroad to remove the discrimination by absorbing the charges from the petitioner's docks. This order was resisted.

The controlling statute, sec. 22 of chapter 784, Statutes of 1913, reads:

"Whenever the Commission shall be of the opinion . . . that the rates . . . or practices of such common carrier affecting such rates are unjust, unreasonable or unjustly discriminatory or unduly preferential, the Commission shall determine the just and reasonable rates . . ."

Interpreting that statute, the Court said:

"An order baldly directing a carrier to remove a discriminatory rate when the only possible way in which that discriminatory rate can be removed is by making a substantial reduction in its rates, and where there is no election to raise some rates or reduce others, without at the same time determining what is a reasonable rate, is not an exercise of the jurisdiction conferred. The determination by the Commission that whether compliance with its earlier orders 'would result in unreasonably low rates for the service rendered it is unnecessary for the Commission at this time to decide' was not in conformity with law. When the order of the Commission, according to its own statement, requires a reduction of rates, it must make a further finding, based on evidence, that such reduced rates would be fair and reasonable and not confiscatory, before its earlier orders would be ripe for enforcement. . . . If the respondent cannot absorb into its regular rate the charges made by the Boston & Albany Railroad for transportation from wharf and dock of the plaintiff to the Boston & Maine tracks without deprivation of adequate compensation for the service it would be required to render in the transportation of freight from that source, serious questions would arise . . . Whether the contract entered into between the directors of the Port of Boston by other carriers is unwise or open to other objections are matters not now before us and are left undetermined."

Apparently the Court interpreted the statutory phrase, "unjustly discriminatory," to exclude discrimination which could be removed only by the establishment of a confiscatory rate.

In its first opinion on this complaint the Commission had adopted the test of unjust discrimination found in Section 2 of the Interstate Commerce Act:

"If any common carrier . . . charges . . . any person or persons a greater or less compensation for any service rendered . . . than it charges . . . from any person . . . for . . . a like and contemporaneous service in the transportation of a like kind of traffic under substantially similar circumstances and conditions such common carrier shall be deemed guilty of unjust discrimination."

Applying this test, which seems to ignore the question of confiscation so far as discrimination is involved, the Commission found the differences in practice to be discriminatory.[37]

[36] 227 Mass. 197 (1917).

[37] After the Court rendered its decision, the Commission commented upon it in its *Report* for 1917 (Page xix). It set out the above two sentences and explained its meaning thus:

"In other words, if the absorption of switching charges resulted, in connection with existing rates for the haul upon its own roads, in unreasonably low compensation

(Footnote 37 continued on page 233)

The difference between the Court and the Commission turns on the interpretation of that statutory phrase, "unduly and unjustly discriminatory." The Commission adopted the Interstate Commerce Act's test quoted above, which does not turn on the question as to whether or not the lower charges are confiscatory. The Court thought rates to the complainant were not unjustly discriminatory unless it was shown that the lower rates to him would be non-confiscatory. The Commission's position on the point is preferable. A utility should not be permitted to evade a statutory prohibition against discrimination by voluntarily granting rates which are so low as to be confiscatory; if it voluntarily makes a contract granting such low rates to one party it should be required to grant the same rates to all others in the same situation unless and until a way is found to increase the rates to all parties.

Probably the real difficulty was a conflict between the Commission and the Court in the method of approach. The opinion of the Supreme Court enjoining the Railroad from cancelling the absorption of charges from the Commonwealth Pier might be enlightening. However, only a preliminary injunction was issued and the decision thereon is not reported in the State Reports. Apparently the Commission thought it was improper for the railroads to grant such a concession to one party, and not to another, and that it was up to the railroads to find for themselves the best means of removing the discrimination. That position is reasonable. On the face of things the Court, by enjoining the cancellation of the contract with the Commonwealth Pier and thereafter reversing this order requiring the railroads to grant the same concession to the plaintiff, seems to be opening the door for evasion of the statutory prohibition. However, in the excerpt quoted, the Court declines to determine whether or not the contract is "open to other objections." Perhaps the Court granted the preliminary injunction because it was not shown that the contract with the Commonwealth Pier was inequitable or that the absorption of charges to all parties would be unreasonable. Thereafter it reversed this order because the reduced rates were not specifically found to be non-confiscatory. Probably it thought that the Commission should have determined in the first place which tariffs were compensatory—whether with or without absorption of charges. If the Commission had found that the absorption of charges to the Commonwealth Pier yielded a confiscatory return, the Court might not have enjoined the railroads' attempted cancellation of the contract; if the Commission had found that the absorption of rates for both would yield a compensatory return, the Court might have affirmed this order.

In two rate cases the Board was reversed because it exceeded its jurisdiction. In *Commonwealth* v. *Housatonic Railroad Company*,[38] the Board of Rail-

(Footnote 37 continued from page 232)

to the Boston & Maine Railroad for the service rendered it was free at once to file new tariffs with the Commission increasing these rates. The removal of the discrimination against the National Dock & Storage Warehouse Company in no way, it seemed to the Commission, imposed obstacles to such procedure."

Without being familiar with the competitive situation in Boston the thought occurs that the Commission's suggestions of a general raise of the Boston rate to cover these switching charges might not be a feasible alternative. Indeed, it seemed merely an afterthought in an effort by the Commission to save its face.

Nothing was done about this matter after the decision. If the rate to the Commonwealth Pier had not been so low as to be confiscatory, it would have been simple for the Commission to find that the lower rate was reasonable; then this order would have been valid. Of course, increasing war prices may have altered the situation during the course of the litigation.

[38] 143 Mass. 264 (1887).

road Commissioners, under statutory authority, fixed maximum rates for the transportation of freight between various points in Massachusetts and other points in Connecticut. In the previous year, the United States Supreme Court, in *Wabash Railway Company* v. *Illinois*,[39] had decided a case on "all fours" with this one, holding that the state had no power to regulate rates on such interstate traffic. The Massachusetts Court specifically recognized that decision as binding, and in a short opinion refused to enforce the Commission's order.

In *Public Service Commission* v. *New England Telephone and Telegraph Company*,[40] the Court held that the Public Service Commission had no jurisdiction to enforce a rate order against the telephone company while the latter was under Federal war-time control. This decision was affirmed by the United States Supreme Court in 250 U. S. 195.

Recently two rate orders of the Department were carried to the Federal Court on questions of valuation and confiscation. In the first (*Worcester Electric Light Company* v. *Attwill*),[41] the Company brought a bill in equity in the United States District Court to restrain the enforcement of an order of the Department of Public Utilities reducing the maximum rates charged for electricity. Extracts from the opinions of the Commissioners indicated that they adopted as a rate-base the standard of capital honestly and prudently invested rather than present value. The Federal statutory court held that method to be in conflict with the law as determined by the Supreme Court of the United States, and issued a temporary injunction restraining the enforcement of the order. A master was appointed who, after hearing the evidence, found that even on a present-value basis the rates prescribed by the Department would yield a fair return on that portion of the capital devoted to the domestic lighting business, and so recommended that the injunction be dissolved and the complaint dismissed.[42] The New England Power Association acquired control of this Company and the case was not carried further.

In *Cambridge Electric Light Company* v. *Attwill*,[43] the Company was likewise seeking an injunction restraining the enforcement of a rate order made by the Department of Public Utilities. Here the Commission had stated that it found the fair value of the property for rate-making purposes according to principles laid down by the United States Supreme Court; therefore the District Court refused a temporary injunction and referred the case to a special master. The Company's bill for injunction was finally dismissed by agreement, with the understanding that the findings of value by the Department and the finding of the rate of return should not be binding upon the utility or used as evidence in any future rate proceeding.[44]

Service

Four cases involved the Commission's power to control service. The Supreme Judicial Court upheld the Commission in two cases and in two reversed its action.

In *Weld* v. *Board of Electric Light Commissioners*,[45] the Court upheld a division of service for sparsely settled territory by agreement between two public utilities, when the petitioner had no complaint as to service or rates. The Board of Gas and Electric Light Commissioners

[39] 118 U. S. 557 (1886).
[40] 232 Mass. 465 (1919).
[41] 23 Fed. (2d) 891 (1928).
[42] P. U. R. 1929 B 1.
[43] 25 F. (2d) 485 (1928).
[44] P. U. R. Digest 1928, p. 551.
[45] 197 Mass. 556 (1908).

had determined that the arrangement was conducive to the public interest.

Western Union Telegraph Company v. *Foster*[46] was an appeal from an order of the Public Service Commission requiring the Telegraph Company to furnish quotations from the New York Stock Exchange to one Foster, although such service had been discontinued in compliance with the contract with the Exchange. The Court affirmed the order on the ground that the Company, as a utility, owed a duty to serve the public without discrimination, and its contract could not be pleaded as a bar to the valid exercise of the police power. By analogy to the doctrine of breaking the original package, this was held to be no interference with interstate commerce. On this latter point the decision was overruled by the United States Supreme Court in 247 U. S. 105 (1917).

In *Brownell* v. *Board of Railroad Commissioners*,[47] the Board, in order to give a ferry company opportunity to litigate its objections to a statute prescribing the service to be furnished, had made an order purporting to postpone the date on which a statutory forfeiture for failure to operate its ferry would begin, without postponing the duty of operating the ferry. The Court interpreted the statute to permit the Board to order postponement of the forfeiture only if the duty to operate was also postponed, therefore the Board's intended order was improper and was enforced as a complete postponement.

The most important of these service cases was *New England Telephone and Telegraph Company* v. *Department of Public Utilities*.[48] After the employees of a contractor refused to complete a hotel building if the telephone wires were pulled by the non-union employees of the Telephone Company, in accordance with the rules of the Company, the Hotel Statler had wires pulled by union workers, not employees of the Telephone Company, and demanded service, which the Telephone Company refused. The Department ordered the Telephone Company to furnish the service but the Court held that this was an invasion of the Telephone Company's rights of management and that the order exceeded the power of the commission.

Apparently, the Department was letting a hard case make bad law and the Court called a halt. What the public and any individual consumer are interested in is the quality of the service and the cost of that service (including regular rates plus the cost of obtaining connections if any, etc). Here the Telephone Company was willing to furnish service about which there was no complaint at charges which were not objected to.

By way of further support for its conclusion the Court found that there was an implied contract that the usual practice of the Telephone Company would be followed; that since the Commission in its order required title to the wiring to be surrendered to the Telephone Company, it violated the property rights of the Telephone Company by requiring the Company to take title to, and operate, property, which upon inspection might be found unsuitable and have to be rejected; and finally that the refusal of the union employees to complete the building if the wires were pulled by the Telephone Company employees was illegal, and that the Hotel Company in acceding to their demand had made itself party to an illegal conspiracy.

Under those circumstances the Court's decision can be justified. If a case arose

[46] 224 Mass. 365 (1916).
[47] 163 Mass. 276 (1895).
[48] 262 Mass. 137 (1928).

where the utility was refusing to extend service or refusing to give adequate service, or was imposing burdensome conditions on the consumer seeking service, there is nothing in this case to prevent the Commission from requiring the company to furnish adequate service upon equitable terms.

The second installment of this article will continue the analysis, covering the public utility cases involving contracts, certificates of convenience and necessity, and security issues and concluding with an evaluation of court and commission relations in Massachusetts as evidenced by this case analysis.

The "Agricultural Ladder" in the Careers of 610 Ohio Farmers

By E. D. TETREAU*

THE "agricultural ladder" has been a subject for research for over a decade. The simple "ladder," found in the earlier studies and in the Federal Census, which described the rise of the farmer from work at home without wages, through the hired labor stage to tenancy and finally to ownership of his own farm, has been found inadequate. More "rungs" and combinations of "rungs" are used by farmers in their progress toward the ownership of a farm,[1] and in addition there are several post-ownership stages through which the farm owner may pass in his attainment of unencumbered ownership.[2] The primary interest of this article will be to discuss the relation of the tenant stage to the other stages in the "agricultural ladder."

Two Ohio counties were chosen for study, one with a high and the other with a low percentage of tenants, both counties, however, being in the same farming region. According to the 1925 Agricultural Census, Madison County had 50.9% tenancy and Union County 31.3%.

Geographically the two counties are very much alike. They both extend over a floor of waterlime which is covered with a thick sheet of glacial drift. The land surface ranges from level to gently rolling with Madison County containing a somewhat larger share of the level land. The soils of both counties are predominantly clay loams and silt loams, with Madison County soils holding the advantage as to quality. In other words, both counties are located in the glaciated, fertile, and relatively level, western half of Ohio.[3] Both counties are in the belt of "from 36 to 39 inches" mean annual rainfall.[4] They are also about as nearly alike as can be with regard to normal temperature; the isotherm 51° F. annual mean temperature passes through these counties running practically north and south.[5] Agriculturally, Madison and Union counties are at the eastern edge of the corn belt, which roughly extends from the Scioto River westward across Indiana, Illinois, and Iowa.

The average Ohio farm in 1925 was 91 acres in size, while the average in Madison County was 163 acres and in Union County 101 acres. Madison County (1925) had 1,705 farms and Union County 2,469, but in total size the counties were nearly alike, the areas in farms being 278,528 and 248,573 acres respectively.

Both counties are in the Virginia Military Reserve. The early settlements were made during the last decade of the 18th and the first part of the 19th

* Acknowledgments are made to Dr. George S. Wehrwein of the University of Wisconsin for stimulating suggestions.

[1] See Hibbard and Peterson, "How Wisconsin Farmers Become Owners," *Wisconsin Experiment Station Bulletin*, No. 402.

[2] See Carl F. Wehrwein, "The Post-Ownership Steps on the 'Agricultural Ladder' in a Low Tenancy Region," 6 *Journal of Land & Public Utility Economics* 65-73 (February, 1930).

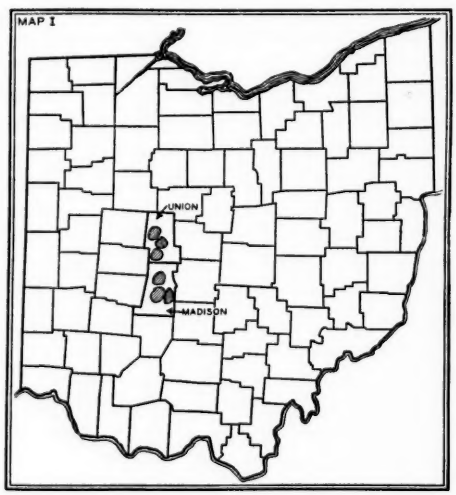
[3] William H. Alexander, *Climatological History of Ohio*, 1924, p. 30, fig. 4; also Ohio Agricultural Experiment Station and United States Department of Agriculture, *Soils Survey Reconnaissance Map*, 1915 (Ohio Soils).

[4] Alexander, *op. cit.*, chart 13, p. 104.

[5] *Ibid.*, chart 28, p. 112.

centuries. Pioneer settlers came from Virginia and Kentucky, and from the New England and Middle Atlantic states. Madison County's farm population in 1925 totalled 9,141, while Union County's was a little higher (9,939). Only 1.1% of the total (1920) population in each of these counties was foreign-born. The proportions of foreign-born on farms are practically alike for both counties.

A total of 610 farm-operators, 305 in each county, were visited during the summer of 1928. Only 140 of the operators visited in Madison County were owners, while 200 of the Union County operators were owners. The remainder of the 305 in each county were tenants.



Three localities in each county furnished the samples, every operator in the locality being visited until about 100 farmers were included (Map I).

The significance of the separation of the two counties lies in the difference in their "agricultural ladders." Since the two counties are quite similar geographically and agriculturally, this difference is to be sought in the peculiarities of the tenure system itself. Hence the relation of the tenant stage to other stages will be different.

As the first step, the tenure history of the 340 Madison and Union County farm owners will be analyzed, after which the "agricultural ladders" of 270 tenants will be discussed.

Tenure History of 340 Ohio Farm Owners

As many as four stages appear in the tenure careers of the owners, and eight different combinations of these stages are used. Table I shows the numbers and percentages of owners using these stages in their different combinations. The information regarding one farmer was incomplete.

The importance of tenancy as a step toward ownership is shown by the fact that over ½ of the present owners included it in their careers.[6] But tenancy is of still greater significance in the high tenancy area, since 65% of the Madison County owners used the step as compared to 43% in the low tenancy county (Union). Furthermore, many operators used tenancy as the *only* step between their sojourn on the home farm and ownership of a farm; 27% of all the owners did so, and the proportion again was greater in the high tenancy (Madison, 34%) than in the low tenancy county (Union, 22%). Not only did a greater proportion of operators in Madison County include the tenancy stage in their careers but also for a greater

[6] Cf. W. J. Spillman et al., papers published in 9 *American Economic Review Supplement No. 2*, p. 172 (March, 1919). The proportion of owners found here who once were tenants is the same as that arrived at by W. J. Spillman for 2,112 mid-western farm owners. Also Hibbard and Peterson (*op. cit.*, p. 11) found that farmers becoming owners before 1872 omitted tenancy in 89% of the cases, while those acquiring farms during 1917-1922 omitted tenancy in 47% of the cases. Those acquiring farms earlier omitted tenancy more easily.

proportion of them it was the sole stage between the home farm and ownership.

Among those who omitted tenancy altogether, 24% passed directly from free labor on the home farm to ownership. They include cases of direct inheritance, of aid from relatives, and of marriage to a wife having a farm. In numbers they constitute the next largest group to that in which tenancy is the *only* step between the home farm and ownership. As might be expected, more owners (27%) in the low tenancy county (Union) passed directly from labor on the home farm to ownership than in the high tenancy area (Madison), where 19% used this particular "ladder."

TABLE I. STAGES IN THE "AGRICULTURAL LADDER" OF 339 FARM OWNERS, MADISON AND UNION COUNTIES, OHIO.

Combinations of Stages to Ownership*	Madison and Union Counties		Madison County		Union County	
	Number	Percentage	Number	Percentage	Number	Percentage
All Owners	339	100	140	100	199	100
F-H-OL-T-O	14	4	8	6	6	3
F-H-T-O	60	18	28	20	32	16
F-OL-T-O	12	4	7	5	5	3
F-T-O	91	27	48	34	43	22
Total including tenancy among the stages	177	52	91	65	86	43
F-H-OL-O	4	1	2	1	2	1
F-OL-O	36	11	13	9	23	12
F-H-O	41	12	7	5	34	17
F-O	81	24	27	19	54	27
Total omitting tenancy	162	48	49	35	113	57

*F, home without wages; H, hired labor on farms; OL, other than farm labor or the farming occupations; T, tenant; O, owner.

Methods of Obtaining Ownership. Whatever the stages through which these owners have passed, not all of them started with nothing and arrived at their goal absolutely "self-made." Table II shows that almost ⅖ of them inherited their farms wholly or in part. This method is of far more importance in the low-tenancy (Union) than in the high-tenancy county (Madison). In the former, 43% of the owners were aided by some form of inheritance, in the latter, only 34%. Marriage accounts for 4% and gifts for 1% of all farms acquired. The men who "married farms" either married a woman who owned a farm at the time of their wedding or a woman who acquired a farm afterward. The two counties do not differ as to the percentages using this method of acquiring a farm. Nor do they differ as to the percentages (6 in each county) of farmers who have purchased from near relatives. Possibly the majority of farm owners who have purchased from near relatives either did not pay the full price for their farms or obtained better terms than they could otherwise have secured. But all these different methods of attaining ownership with aid from others account for only ½ the instances; the other 50% of these owners purchased outright from strangers. Comparing the two counties, the proportion of "purchases from others" is higher in the high tenancy county (55%) than in the low tenancy county (46%).

Fourteen of the 77 owners (18%) in Madison County who bought their farms outright did not make use of the tenancy stage in their unaided climb. On the other hand, in the low tenancy county, 33 out of the 93 who purchased outright omitted tenancy. This is proportionally twice as many. All in all, 28% of the farmers who became owners without aid from relatives were able to do so without becoming tenants. This shows that though nearly ½ of the owners omitted tenancy from their careers (Table I) they do not by any means coincide with the ½ in Table II who were helped by relatives.

Lengths of the Stages Used by These Owners. Not only is it important to know how many stages an owner has used in his career, but also the length of time he has spent in each stage. In fact, the number of stages and their

TABLE II. METHODS USED BY 340 FARM OWNERS IN ATTAINING OWNERSHIP.

Methods of Attaining Ownership	Madison and Union Counties		Madison County		Union County	
	Number	Percentage	Number	Percentage	Number	Percentage
All farmers	340	100	140	100	200	100
Inheritance	100	29	36	26	64	32
Part inheritance	32	9	11	8	21	11
Marriage	14	4	6	4	8	4
Gift	4	1	1	1	3	2
Purchase from near relatives	20	6	9	6	11	6
Purchase from others	170	50	77	55	93	46

duration as well as the relationship between them outline practically the entire picture of American land tenure. Table III gives the data for the present (1928) owner-operators of the two counties.

The average number of years spent as laborer on farms and in other employments than farming, as well as in tenancy, is reckoned only for those who employed these stages. At the time the figures were obtained (1928) the average age of the 339 owners was a little over 54 years, being one year less for the Madison County farmers and one year more for those in Union County. All these farmers have been owners an average of between 19 and 20 years (19.5), the high tenancy county (Madison) owners averaging over two years less (18.1) than the Union county owners (20.5). The average age at which these owners, as young men, left the home farm where they lived as free laborers was a little over 22 years, but this period came to a close almost two years earlier in the high tenancy than in the low tenancy county. In brief, the span between the end of free labor and the achievement of ownership was two years longer in the high tenancy than in the low tenancy area.

Table III also gives the average length of time spent in any one employment for those who used that stage. Over ⅓ of the farmers used the hired-man stage, the low tenancy county showing the higher percentage. Moreover,

TABLE III. LENGTH OF THE STAGES USED BY 339 OWNERS

Lengths of the Stages and Ages at End of F and Beginning of O	Madison and Union Counties			Madison County			Union County		
	Number of Farmers	Percentage of Farmers	Average Years	Number of Farmers	Percentage of Farmers	Average Years	Number of Farmers	Percentage of Farmers	Average Years
Average number of years spent at hired labor on farms	119	35	11.2	45	32	9.9	74	37	11.9
Average number of years spent at other labor	66	20	14.6	30	21	12.6	36	18	16.2
Average number of years spent as tenant	177	52	12.1	91	65	12.9	86	43	11.2
Average number of years since ownership was achieved	339	100	19.5	140	100	18.1	199	100	20.5
All farmers and average ages	339	100	54.4	140	100	53.3	199	100	55.3
Average age at end of free labor	339	100	22.4	140	100	21.9	199	100	23.5
Average age at time farm was acquired	339	100	34.9	140	100	35.2	199	100	34.8

the average length of time spent in this stage was longer by two years in the low tenancy county (Union) than in Madison County (11.9 and 9.9 years, respectively), while for the farmers of both counties this stage averaged 11 years in length. The table shows also that while over ½ of the farmers used tenancy as a step to ownership, averaging over 12 years in this stage, yet a comparison of the two counties shows a marked difference between them in this respect. In the high tenancy county almost ⅔ of the farmers used this step, spending almost 13 years as tenants, compared with considerably less than ½ of the owners in Union County who thus spent a little over 11 years.

A reciprocal relationship between the hired labor and tenancy stages is clearly seen in comparing the two areas. In the low tenancy area a larger proportion of owners had been hired laborers and for a greater number of years than in the high tenancy area while, conversely, a smaller proportion of owners had been tenants and for fewer years. A combination of the two stages performs the same function in both areas, i. e., bridges a large gap between free labor and ownership, but the difference in the combinations used in the two areas from the point of view of the average operator depends upon the area in which he lives.

Occupations Other Than Farming. It will be seen that ⅕ of the present owner-operators (Table III) had engaged in non-agricultural pursuits.[7] This stage has an average length of almost 15 years, which is longer than the averages for either the farm labor or the tenancy stage. A higher percentage of farmers in Madison County (21%) used this stage than in Union County (18%), but the average length of time is considerably greater in the latter. Table IV which classifies these occupations includes farm management, which is placed in this classification because it does not fit into the usual stages of the "agricultural ladder." Four men reported experience as farm managers.

TABLE IV. NON-AGRICULTURAL OCCUPATIONS OF 66 OWNERS.

Occupations	Number	Percentage
Common labor	48	73%
Trades	11	17
Business	16	24
Professions	18	27
Managing farms	4	6
Other	6	9

The total number of occupations exceeds the number of men since several men engaged in more than one occupation. Almost ¾ of the owners reported working at common labor[8] while away from agriculture.

The "Agricultural Ladder" of 270 Tenants

If we regard ownership as the final goal of the "agricultural ladder," the tenants are presumably still climbing. Only a few steps have been taken so far but it will be of interest to observe what these are. Moreover, even more interesting will be an examination of the relationship between the present stage of these tenants and the ownership stage which they have not yet reached. This is not generally done in studies of this kind. We shall, therefore, go a step farther than is usual and inquire as to (1) those who are most likely to become owners, (2) those who appear least likely to become owners, and (3) those whose future is difficult to predict.

[7] See Sorokin and Zimmerman, *Principles of Rural-Urban Sociology* (New York: Henry Holt & Co., 1929), p. 37. Occupations other than farming are herein discussed under "inter-occupational mobility."

[8] Common labor includes work in woods, sawmills, glass works, road-construction, well drilling, grain elevators and oil fields, truck-driving, and similar employments.

First, as to the steps that have already been taken, Table V shows that 76% of the 270 tenants have confined their attention to agriculture. This means that almost ¼ of these tenant-operators have gone to work outside of agriculture sometime in their careers, as contrasted with ⅕ of the owners. A greater proportion of the tenants in the high tenancy area have engaged in non-agricultural occupations (27%) than in the area of low tenancy (20%). Comparison with owners (Table III) in these two areas gives similar results.

TABLE V. AGRICULTURAL AND OTHER OCCUPATIONS ENGAGED IN BY 270 TENANTS.

	Madison and Union Counties		Madison County		Union County	
	Number	Percentage	Number	Percentage	Number	Percentage
Total farmers who are now tenants	270	100	165	100	105	100
Tenants who have been farm laborers	125	46	88	53	37	35
Tenants who have been common laborers	49	18	32	19	17	16
Tenants who have worked at a trade	10	4	7	4	3	3
Tenants who have engaged in a business	10	4	7	4	3	3
Tenants who have been in a profession	2	*	1	*	1	1
Tenants who have been in other occupations	4	1	4	2	0	0
Tenants who have worked at farming only	205	76	121	73	84	80

*Less than ½%

Compared to the 35% of the owners who have been hired men, 46% of the tenants have been farm laborers for a part of their careers. The percentages of owners who have worked at a trade, been in business or in a profession (Table IV) are very much higher than those of tenants (Table V). Moreover, 48 (14%) of the 339 owners (Table IV) have worked at common labor in contrast to 49 (18%) of the 270 tenants. On the other hand, 80% of the owners have worked at farming only (Table III), while the corresponding figure for the tenant group is 76% according to Table V.

Occupations of Fathers and Grandfathers of Ohio Farm-Operators

Agriculture is characterized by a tendency for sons to follow in their father's footsteps. Even though many of the family go into other occupations, usually some members remain in farming, and a few who leave the farm return to it as indicated above. Often the same farm is passed from one generation to another. Even when there is no farm in the family to pass down to son and grandson, attitudes toward ownership and tenancy may be developed so that the son may be ambitious or indifferent about an ownership goal for his own farming career. The question here raised is, "Does there appear to be a relationship between the tenure of the fathers and grandfathers and the tenure of these present farm-operators?"

Information was obtained concerning the occupation and tenure (if a farmer) of the fathers of 339 owners and 264 tenants (Table VI). Since these fathers had engaged in a variety of occupations, both agricultural and non-agricultural, in the course of their careers, the occupation or agricultural stage at the time of the father's retirement is the one indicated in the table.

In the cases of only 5% of the owners and 4% of the tenants were the fathers of these farmers engaged in non-agricultural pursuits. These few cases, however, represent a "back-to-the-land" movement which may be said partly to offset the drift to villages and cities. Eighty-three per cent of the owners had fathers who were owners of their farms, as compared to 63% of the tenants. On the other hand, almost three times as many tenants as owners had fathers on rented land at the time of (the fathers')

retirement. Perhaps the economic advantage as well as the training of the sons of owners gave them a better start in life. Doubtless among the fathers who were tenants there were some who died prematurely and who might have become owners had their careers not been cut off. This circumstance would handicap their sons who became farmers to the extent that the inheritance was thereby decreased. All in all, 95% of the fathers of these farmers were engaged in agriculture. Those fathers who attained ownership have a much higher percentage of sons among present day owners than those fathers whose careers ended in tenancy.

TABLE VI. OCCUPATIONS OF FATHERS OF 603 OHIO FARM OPERATORS.

Occupational Relations	All Farm Operators		Owners		Tenants	
	Number	Percentage	Number	Percentage	Number	Percentage
All from whom information was obtained	603	100	339	100	264	100
All whose fathers were farm operators	556	92	315	93	241	91
All whose fathers were farm owners	446	74	280	83	166	63
All whose fathers were farm tenants	100	18	35	10	75	28
All whose fathers were farm laborers	17	3	7	2	10	4
All whose fathers were common laborers	9	2	3	1	6	2
All whose fathers followed a trade	10	2	7	2	3	1
All whose fathers were in business	5	1	2	1	3	1
All whose fathers were professional men	2	*	1	*	1	*
All whose fathers followed other occupations	4	1	4	1	0	0

*Less than ½%.

The relationship was traced back another generation for 275 owners and 196 tenants. In this case the occupation of the paternal grandfather was ascertained. Table VII shows that 96% of the grandfathers were in agricultural pursuits, 90% being farm operators and 6% farm laborers. As in the case of the fathers, the grandfathers who were owners of farms at the time of death or retirement have a great many more grandsons among present day owners than had the grandfathers who were tenants. In other words, present day tenants were more largely recruited from among the grandsons of tenants than from among the grandsons of owners.

TABLE VII. OCCUPATIONS OF GRANDFATHERS OF 471 OHIO FARM OPERATORS.

Occupational Relations	All Farm Operators		Owners		Tenants	
	Number	Percentage	Number	Percentage	Number	Percentage
All from whom information was obtained	471	100	275	100	196	100
All whose grandfathers were farm operators	424	90	250	90	174	89
All whose grandfathers were farm owners	358	76	218	79	140	71
All whose grandfathers were farm tenants	66	14	32	12	34	17
All whose grandfathers were farm laborers	29	6	11	4	18	9
All whose grandfathers were common laborers	3	1	2	1	1	*
All whose grandfathers followed a trade	4	1	3	1	1	*
All whose grandfathers were in business	5	1	4	2	1	*
All whose grandfathers were professional men	2	*	2	1	0	0
All whose grandfathers followed other occupations	4	1	3	1	1	*

*One-half of 1% or less.

On the other hand, Tables VI and VII show that the proportion (79%) of owner-grandsons to owner-grandfathers is similar to the proportion (83%) of owner-sons to owner-fathers. Likewise, grandfathers who were farm operators have nearly the same proportion of farm operators among their farmer grandsons, as have owners who were operators among their sons (90% and 92%). Slightly different, however, is the case with grandfathers who were tenants as compared with fathers who were tenants. A smaller percentage of their grandsons

are tenants (17%) than in the case of fathers who were tenants and whose sons are now tenants (28%).

Three-generation relationships were then found for the 471 owners and tenants who furnished information regarding both their fathers and paternal grandfathers. Table VIII shows that

TABLE VIII. THREE-GENERATION TENURE RELATIONSHIPS OF 471 FARM OPERATORS.

Relationships*	All Farm Operators		Owners		Tenants	
	Number	Percentage	Number	Percentage	Number	Percentage
All	471	100	275	100	196	100
F and GF farm operators	365	78	224	81	141	72
F and GF owners	327	69	208	76	119	61
F and GF tenants	38	8	16	6	22	11
F and GF laborers	9	2	6	2	3	2
F owner, GF tenant	30	6	15	5	15	8
F tenant, GF owner	23	5	5	2	18	9

*F, father; GF, grandfather.

78% of these operators had both father and grandfather farm-operators. A very large proportion of these farmer-operators were owners. More than ¾ of the present day farmers had two generations of owners behind them as compared with ⅗ of the present day tenants. On the other hand, two generations of tenants produced almost twice as many present day tenants as present day owners. A considerable number of farmers had a tenant-father and an owner-grandfather or the converse. There was no instance of both father and grandfather being in non-agricultural pursuits.

While no data have been obtained as to inheritance excepting as between the present generation and the one preceding (Table II), the importance of inheritance is easily apparent. We shall now take up the 270 present tenants and see what part inheritance plays in their plans for their agricultural future.

[9] The estimate was made by the enumerator and operator jointly and in some cases corrected with the aid of a banker.

Tenants Who Are Owners-in-Prospect

While making the farm-to-farm visitation the writer found 48 "related" tenants who not only were renting from relatives, but who were in definite agreement with their "related" farm owners, whether father, father-in-law, or otherwise, that the farms they were operating were to become theirs by gift or by inheritance. This agreement distinguishes them from the other tenants as to prospects of ownership, and we shall hereafter call these tenants "owners-in-prospect."

Taking up certain characteristics that distinguish owners-in-prospect from other tenants as well as from owners, we shall analyze their economic worth, age, and mobility. "Economic worth" is taken to mean an estimated[9] cash value of land and improvements, implements, live stock, and other assets, minus indebtedness. "Mobility" is determined by dividing the total number of years the farmer has been operating a farm as tenant or owner by the number of farms he has occupied. Thus for each group of farms "mobility" is indicated by the average number of farms occupied and the average stay in years on each farm.

Table IX indicates that almost ¾ of the owners-in-prospect are found in the low tenancy county. If we reckon the percentages of tenants who are owners-in-prospect in each of the two counties, we find that Madison County has only ¼ as many as Union, 8% as compared with 33-⅓%. The smaller and less expensive (both because of size and lower land values) farms of Union County make it relatively easier to attain ownership, other things being equal. This table also brings out the often observed fact that tenants operate larger farms than owners. Acres owned are shown in the table. In some cases additional acres were operated but not enough to

TABLE IX. ECONOMIC WORTH AND SIZE OF FARMS OPERATED BY OWNERS, OWNERS-IN-PROSPECT, AND OTHER TENANTS.

County	Total Number of Farm Operators	Owners			Owners-in-Prospect			Other Tenants		
		Number	Average Economic Worth	Acres in Farms Owned	Number	Average Economic Worth	Acres in Farms Operated	Number	Average Economic Worth	Acres in Farms Operated
Madison and Union.....	610	340	$11,750	139	48	$2,981	197	222	$2,177	190
Madison.....	305	140	13,570	170	13	3,069	217	152	2,272	225
Union.....	305	200	10,513	117	35	2,949	181	70	1,969	143

effect greatly general results. Furthermore, owners-in-prospect operate larger farms than other tenants, when both counties are averaged, and in Union County considered separately.

Economic worth usually becomes greater as the operator becomes older, since the younger man has not yet had time to make accumulations of land and capital. Thus we may expect owners to be worth more than tenants. But it is significant that owners-in-prospect, averaging 36 years of age (Table X), should have accumulated 37% more wealth than other tenants who average approximately 44 years; and in neither case are there accumulations of landed property.

Continuing our comparison of the ages of these farmers, Table X[10] sets forth a number of significant points. While owners are to be found on their farms even when over 80 years of age, tenants disappear between 71 to 75, and only 16 out of 222 are above 60 years of age. With tenants, when bodily strength declines, retirement from farming becomes imperative. Either a large proportion of them pass over into the owner group before they reach 60, or they slip back into the laborer class, or they go out of farming into other occupations. The number of tenants who remain in the game at 56 and over is small. In this sample only 17% are still farming at these ages. Another point brought out by Table X is that owners-in-prospect disappear after the ages 56 to 60; pre-

[10] Since this table and the two following are of considerable length and since no significant difference appears between Madison and Union Counties, the county subdivision will not be made.

TABLE X. AGES OF 610 FARM OPERATORS, BY TENURE GROUPS.

Age Groupings	Number of Farm-Operators*	Owners†	Owners-in-Prospect‡	Other Tenants§
All.....	610	340	48	222
21–25.....	26	5	9	12
26–30.....	49	17	9	23
31–35.....	54	15	9	30
36–40.....	48	16	6	26
41–45.....	71	32	5	34
46–50.....	71	36	6	29
51–55.....	81	49	2	30
56–60.....	89	45	2	22
61–65.....	62	52	0	10
66–70.....	39	35	0	4
71–75.....	20	18	0	2
76–80.....	10‖	10	0	0
81–85.....	9	9	0	0
86 and over....	1	1	0	0

*Mean age=49.1; median age=50.05; modal age=53.5.
†Mean age=54.4; median age=56.6; mode=56.6; modal age calculated using 10-year class interval.
‡Mean age=35.7; median and mode not calculated because of small sample.
§Mean age = 43.4; median = 44.1; mode = 43.6.
‖Twenty farm operators, all of them owners, are 76 years of age and above. All owners living on their farms, whether physically active or not, were included in this study. Those, however, who took no part in the management of their farms were excluded. Several of these owners were very active physically considering their ages, and one of them did practically all the farm work on his small farm.

sumably they have become owners. Only 4 of them are above 50 years of age while 27 of the total 48 are 35 or younger.

Mobility offers another basis for the comparison of owners and tenants, and especially for pointing out another essential difference between owners-in-prospect and other tenants (Table XI).

TABLE XI. MOBILITY OF 610 FARM-OPERATORS BY TENURE GROUPS.

Average Number of Years on Each Farm Occupied*	Owners		Owners-in-Prospect		Other Tenants	
	Number of Farmers	Average Number of Farms Occupied	Number of Farmers	Average Number of Farms Occupied	Number of Farmers	Average Number of Farms Occupied
Total.....	340	2.1	48	1.2	222	3.8
5 and less.....	60	2.6	23	1.3	157	3.9
Over 5–10.....	81	2.9	10	1.0	50	3.1
Over 10–15.....	61	2.2	6	1.2	8	2.2
Over 15–20.....	47	1.6	4	1.0	7	1.3
Over 20–25.....	22	1.3	5	1.0	0	0
Over 25–30.....	12	1.3	0	0	0	0
Over 30–35.....	14	1.2	0	0	0	0
Over 35–40.....	19	1.0	0	0	0	0
Over 40–45.....	7	1.0	0	0	0	0
Over 45.....	17	1.0	0	0	0	0

*These data were first calculated for each farm operator by dividing the number of years of entrepreneurial experience by the number of farms occupied during that period. For owners, entrepreneurial experience includes number of years spent as an owner and, if once a tenant, years spent as a tenant. This is quite different from averaging the years per farm for the time spent as an owner only. For both groups of tenants the entrepreneurial period includes years spent as an owner, if once an owner, as well as the years spent as a tenant. (Eighteen tenants were once owners.)

These 610 farm operators have been entrepreneurs, whether as owners or as tenants, an average of 20.6 years each. During these years each individual occupied 2.7 farms, living on each farm 7.6 years. Tenants not classified as owners-in-prospect have been most mobile, averaging only 2½ years on each farm occupied (3.8 farms). In contrast, owners-in-prospect averaged nearly eight years (7.7) on each farm (1.2 farms), while owners have spent 15 years on an average of two farms (2.1) each. The contrast between owners-in-prospect and other tenants as to mobility is the more marked when we recall that the former are, on an average, seven years younger.

Almost ⅛ of the owners, according to Table XI, have occupied but one farm for a period averaging over 35 years, while more than another ⅛ have occupied an average of a little more than one farm each for from 20 to 35 years. In contrast to these owners none of the tenants, other than owners-in-prospect, have spent more than 20 years on one farm. In fact, over 70% of them have spent five years or less on each farm occupied. Owners-in-prospect have not averaged as many as two farms each and they stand between owners and other tenants with respect to mobility. They not only constitute the least mobile element among tenants, but, once having become owners, constitute the least mobile element among them, when the entire entrepreneurial career of each owner is considered. Tradition and sentiment probably contribute to this relative stability.

The contrast in mobility between owners-in-prospect and other tenants is brought out in greater detail in Table XII, in which a class interval of one

TABLE XII. MOBILITY OF 270 TENANTS.

Average Number of Years on Each Farm Occupied	Owners-in-Prospect		Other Tenants	
	Number of Operators	Average Number of Farms Occupied	Number of Operators	Average Number of Farms Occupied
Total.....	48	1.2	222	3.8
1 and less.....	5	1.6	16	2.7
Over 1 and 2...	3	1.7	33	2.9
Over 2 and 3...	5	1.0	47	4.3
Over 3 and 4...	7	1.3	29	5.2
Over 4 and 5...	3	1.0	32	4.1
Over 5 and 6...	1	1.0	14	3.6
Over 6 and 7...	3	1.0	6	2.2
Over 7 and 8...	3	1.3	16	3.3
Over 8 and 9...	1	1.0	4	3.5
Over 9 and 10..	2	1.0	10	2.6
Over 10 and 11.	1	2.0	4	3.0
Over 11 and 12.	2	1.0	3	1.3
Over 12 and 13.	0	0	0	0
Over 13 and 14.	2	1.0	0	0
Over 14 and 15.	1	1.0	1	2.0
Over 15 and 16.	1	1.0	2	1.5
Over 16.....	8	1.0	5	1.2

year is used instead of five years. These 48 owners-in-prospect constitute a group initially set apart from the other tenants because of rather definite prospects of ownership through inheritance or gift. These farmers are younger than other tenants yet better off as to economic worth; they are very much younger than owners, yet come to ownership with a very low record of mobility. In connection with another study of these farmers it has been found that they not only surpass other tenants, but owners as well, in the percentages participating in local social organizations and institutions.[11]

Permanent Tenants

Among "other tenants" is another group, less easily defined, which is composed of farmers who appear least likely to become owners. Tenancy is for them the top of the "ladder." Two criteria are here used to distinguish them: age and economic worth.

Age is important when predicting a tenant's chances to reach ownership. The chances dwindle as the years accumulate and the tenant's physical vigor declines. We have already seen that tenants decrease in number very rapidly in the sixties, and that they disappear in the early seventies (Table X). Furthermore, all average measures of owners' ages fall in the late fifties, while for tenants (other than owners-in prospect) the average ages start to drop in the early forties. Clearly tenants who pass from tenancy to ownership do so in considerable numbers during the late forties and the early or middle fifties. Those who are unable economically to undertake ownership by the time they reach the middle fifties have two factors operating against them: the experience of the majority of owners as an indicator of probability and the years of declining vigor ahead of them.

Present net economic worth is also an important factor. We may well ask, "How much should a tenant be worth in order that he may undertake ownership on an equal footing with other farmers who have recently purchased farms?" In checking over the total of 340 owners, 20 were found who had purchased farms one, two, and three years prior to this inquiry which was made in July and August, 1928. They had been owners 1.9 years, after having spent 9.1 years as tenants, and their average net economic worth was $8,036. Their present ages averaged 38 years. Considering that these owners are in their best years and, therefore, operating larger and more expensive farms (using more capital) than farmers in the late fifties or older may care to handle, and considering that they have had about two years in which to make accumulations since becoming owners, let us subtract $3,000 from the $8,000, and assume that $5,000 would be a minimum economic requirement for an older tenant toward purchasing and operating a farm in Madison or Union County.

Applying these two criteria to the 222 other tenants than owners-in-prospect, 34 tenants were found who were 56 years of age or older and whose net economic worth was less than $5,000.[12] Judging from experience as registered by the other farmers of this study, these tenants are the least likely of the total 270 to become owners. Shall we call them "permanent" tenants? Who knows

[11] E. D. Tetreau, *Rural Economics Mimeograph No. 29*, College of Agriculture, Ohio State University. Also T. B. Manny, and R. C. Smith, *United States Department of Agriculture Mimeograph*, "The Ohio Farm Bureau Federation from the Point of View of the Farmer" (1931).

[12] Distribution of 222 tenants by economic worth: $0-1000, 62; $1001-2000, 83; $2001-3000, 39; $3001-4000, 15; $4001-5000, 8; $5001-6000, 6; $6001-7000, 2: $7001-8000, 3; $8001-9000, 1; $9001 and over, 3.

whether or not they all are permanent? Possibly several will step over into the owner class before the tide of years compels them to retire, but the experience of other farmers shows that not many will.

There remain 188 other tenants who are younger than 56 years of age, and whose net worth ranges from practically nothing to over $34,000. They average about 40 years of age. Fifteen of them are worth over $5,000 each. These might undertake ownership with a fair financial start and with the advantage over the permanent tenants of 1½ decades in age. Some of these more prosperous tenants, although well able to be come owners of farms, seem to prefer to keep their investment in working capital, employing it on land which is owned by some one else. They are choosing to remain tenants, and perhaps with considerable economic advantage.

Sixty-four per cent (173) of the entire number of tenants in this study (270) still remains. Prediction of their economic success is exceedingly difficult, and some success is a prerequisite to becoming farm owners. Of these 173 tenants, 84% have a net worth of $2,000 or less in working capital and other goods. Some of them may change their occupations, catastrophe may reduce others to day labor or at best to seasonal labor on farms, while a few may be overtaken in middle life by death. At present they have the advantage of being in their most vigorous years, and the disadvantage of meager accumulations.

While it is "normal" for men to strive to climb upward, not only on the "agricultural ladder" but on any social-economic ladder,[13] not all who succeed in attaining the next higher step can hold on. Some slip back. For example, 18 men are now renting farms who once were owners. Two of them had actually inherited farms, thus starting their careers practically independent. Also a few tenants reported breaks in the tenancy stage, having been obliged to step back into the farm laborer stage for a year or more, in order to "get a fresh start."

Summary

In observing the careers of these Ohio farm operators particular attention has been paid to the tenancy stage of the "agricultural ladder" in relation to the other stages. It is clearly the most important of the stages between free labor on the home farm and ownership, both as to the proportions of operators who made use of it and as to its length in years. It is important in the careers of those owners who climbed the "ladder" unaided by relatives, as well as for those who gained their farms by inheritance or other forms of help. It was the top of the "ladder" for a considerable proportion of the fathers and grandfathers of present day tenants and for a smaller proportion of the fathers and grandfathers of present day owners. Evidence indicates also that it may be the top of the "ladder" for a noticeable percentage of present day tenants, but for a greater percentage it constitutes a step toward ownership. In comparing three successive generations of farmers, tenancy is the top of the "ladder" for an increasing proportion of operators.

With geographic and population factors relatively constant, the social-economic environment created by the tenure condition of surrounding farmers has considerable influence upon the behavior of the individual farm operator. His agricultural career is quite different in a high than in a low tenancy area.

[13]Pitirim Sorokin, *Social Mobility* (New York: Harper & Bros., 1927.) See this work for analysis of the channels of social circulation. Also E. A. Ross, *Principles of Sociology* (New York: Century Co., 1920), Chapter XXX.

The Los Angeles Bureau of Power and Light: Development of Market Area

By MARTIN G. GLAESER

LOS ANGELES is the largest city in area within the United States. Since the beginning of the present century it grew by successive accretions from an area of 43 square miles until the present municipal boundaries enclose 441 square miles. A glance at the curves contained in an earlier article[1] will reveal that the period of greatest growth in this as in other respects has followed the bringing of aqueduct water into the City.

While the Bureau of Water Works and Supply is the sole distributor of water under pressure in this area, the Bureau of Power and Light shares this market with the Los Angeles Gas and Electric Company and the Southern California Edison Company in rendering electric service. After earlier efforts, first to lease the power sites for development to private companies and later to induce the City to sell its power at wholesale to private franchise holders, had been defeated, the City undertook to build its own distributing system. On March 30, 1916, the first pole for the overhead distributing lines was set in the northeast section of the City. The Power Bureau began by serving only a few thousand customers in territory competitive with the Southern California Edison Company. By 1929 it had expanded the area of service until it served 220,710 customers. During this 13-year period the quantity of energy sold by the Power Bureau increased from 14,784,817 kw.hrs. in 1917 to 587,120,193 kw. hrs. in 1929.

Thus far the operating history of the electric utility can be divided roughly into two periods: one of competitive beginnings during which the utility was attaining all the earmarks of a going concern; another of normal operation under stabilized competitive conditions during which the real results of managerial and financial policies have begun to appear.

The Competitive Period

The first period of seven years extends at least through the fiscal year ending June 30, 1923. By 1910, when the first bond issue for preliminary work in connection with power developments was voted, the policy of the City had definitely settled down to developing its water and power resources under public ownership. This policy was officially declared and firmly imbedded in the municipal charter by 1913. In a charter amendment the legal right of the City to dispose of power development opportunities was withheld as was also the right to sell the energy actually generated at wholesale, except alone surplus power. Even the disposal of surplus power was limited to municipalities and hedged about by means of revocable contracts. The power of sale to persons or corporations for redistribution was specifically denied.

In 1914 bonds to the amount of $6,500,000 were voted for the construction of power plants and a transmission system and for the construction or acquisi-

[1] 6 *Journal of Land & Public Utility Economics* 352 (November, 1930). Charts and tables in this article are numbered consecutively after those in the earlier article.

tion of a distributing system. As a preliminary, city officials, cooperating with civic organizations, undertook negotiations to acquire the lines of existing private electric utilities. Since the response to these overtures was deemed unsatisfactory, condemnation proceedings to acquire the property of the larger of these, the Southern California Edison Company, were determined upon. These proceedings[2] before the Railroad Commission of California were to determine a valuation of the Company's property within the City. To avoid the delay which would result from formal condemnation proceedings, especially since the completion of the first power plant (San Francisquito No. 1) was within sight, the City proceeded with the construction of distribution lines paralleling those of the Edison Company in certain parts of the City. It is claimed that, upon being solicited, 80% of the consumers along the City's lines signed up and were connected. It seems that this showing of determination on the City's part speeded up negotiations with the result that a purchase contract was finally obtained.

The purchase contract of 1917 gave the City the right and option to purchase the complete distribution system within the City consisting of lands, local distributing substations, low voltage distributing lines, poles, conduits, services, meters, and records. The option contract was necessary in order to give the City time to obtain authority to issue bonds. Essential to the purchase contract was an operating agreement, also negotiated between the parties at the same time and covering with its extensions the period of time between the taking of the option and the coming into possession of the property upon payment of the purchase price. The purchase agreement, as later modified, fixed a price of $11,000,000 as of July 1, 1919, with allowance for extensions and betterments less depreciation to the time of actual purchase.

The operating agreement also served as a legal device permitting the City to dispose of surplus power in excess of energy required by its own customers and thus obtain a revenue therefrom. During the term of the agreement the Company acted as the agent of the City in distributing such surplus to consumers served through the distributing system subject to purchase. The agreement further provided that the Company should have charge and control of the operation of such distributing system, collecting all bills and paying to the City the net proceeds after making certain deductions. These deductions covered the actual costs of operation, maintenance, taxes and licenses; the price of energy furnished consumers by the Company, representing demands not supplied through the City's surplus power; a fixed monthly allowance of 8% upon the option price for use of the Company's property; a monthly allowance of 3.36% for depreciation on the optioned property together with its extensions, such depreciation to be segregated in a special reserve and to follow the final ownership of the property. In addition, reciprocal standby or emergency services were provided for as between the Company and City plants. Under the agreement the City was, of course, empowered to complete the development of aqueduct power possibilities and the possibility of acquiring the steam generating plant and electric distributing system of the Los Angeles Gas and Electric Corporation was likewise contemplated and authorized.[3] The City agreed, on

[2] 11 California R. C. 83; *ibid.*, p. 588, Sept., 1916.

[3] "The power purchase feature of the purchase agreement. . . provides that for a period of ten years, while the

(Footnote 3 continued on page 251)

the other hand, not to construct electric distributing lines paralleling or duplicating the Edison system without its consent except for street lighting purposes.

Because of war conditions and delay occasioned by litigation instituted in behalf of hostile power interests, the bonds to consummate purchase could not be sold. Not until May 15, 1922, did the City finally come into possession of the property. While the $13,500,000 of power bonds had been voted in 1919, they were not actually sold and delivered until February, 1922. Thus for more than four years the Company operated the property subject to acquisition under the option contract.

The Power Bureau plants producing energy for the Los Angeles market at that time were located at points within 47 miles of the City. Their output was made available between April, 1917 and October, 1922. Because of the financial difficulty referred to above, the expansion of the system was limited by the funds available for reinvestment as surplus earnings. Delay and additional expense also were caused by the difficulties during the war and post-war years of securing the manufacture and delivery of equipment, while construction work was impeded by the continuous and high turnover of labor.

Nevertheless, the favorable rates for service, and particularly power service, put into effect in 1917 so aided the industrial growth of the City that all aqueduct power was easily absorbed and the search was begun for additional power resources in the Sierra Nevadas and on the Colorado River. The principal reason assigned for this search for means of extending the municipal generating system was that the electric power generated by the municipal system was said to cost about .45c per kw. hr., while that purchased from the Southern California Edison Company cost approximately 1.05c per kw. hr. At the close of the fiscal year, June 30, 1922, 70% of the power supplied to municipal consumers was generated at municipal plants, while the remaining 30% had to be purchased.

After the purchase of the Edison distributing system, it became necessary to rehabilitate and unify the operation of the hitherto distinct properties. Plans therefor had been carefully made and brought as near completion as possible during the period of litigation. It was inevitable that the delay in transferring the Edison lines should have retarded the making of necessary improvements. During the first fiscal year of unified operation under one organization, the year ending June 30, 1923, an amount of $3,300,000 had been set aside for this purpose, although it was estimated that further essential improvements to be made the following year would cost even more than this figure. Hence it is somewhat doubtful whether the period of normal operation may be said to have

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(Footnote 3 continued from page 250)

City may purchase and operate the existing steam plant of the Los Angeles Gas and Electric Corporation, it will otherwise confine its regular power generation to hydro-electric plants owned or controlled by it. That the Company will sell and deliver and the City will purchase from the Company, for a period of thirty years, all electric energy it may require for its own uses and for general distribution within the limits of the City in excess of the amount it may generate at such hydro-electric and steam plants, at rates to be fixed from time to time by the State Railroad Commission, and for supplying the City of Pasadena; that the Company shall have, for a period of fifteen years, the right and option to purchase, upon written notice, any surplus electric energy the City may generate over and above such requirements and that the City may, with the approval of the majority vote of the people, terminate the whole agreement at the end of ten years from the date of purchase, or any time thereafter."

Eighteenth Annual Report of the Board of Public Service Commissioners of the City of Los Angeles, p. 30, June 30, 1919.

begun with the fiscal year ending June 30, 1924.

The Period of Stabilized Competition. It has always been a fixed point in the City's policy to achieve complete monopolization of the electric distributing facilities within the City. The Los Angeles Chamber of Commerce especially, among the civic organizations, sponsored this program in order to avoid the economic waste which would follow duplication of investment and operation. The City officials responsible for the management of the properties were likewise anxious to bring about city-wide monopoly in electric service because it was hoped that thereby the constant temptation for private power interests to interfere with the City's general development program would in large measure be abated. The failure of friendly negotiations toward this end have prompted the City to undertake the condemnation of the electric properties and business of the Los Angeles Gas and Electric Corporation. While earlier efforts at paralleling have now abated, this form of competition, together with the haphazard and uncontrolled expansion in facilities by rival utilities into newly annexed territories has left the City with a hodge-podge of market areas, best shown by means of Chart VII. The chart reveals plainly a market area which represents a bedlam of competing lines such as is difficult to find elsewhere. Equally clear is the evidence of failure to achieve even the original aim, namely, that with successive annexations the distribution system of the Edison Company in the annexed territories shall be sold to the City. The pressure to achieve universal distribution of electric energy by means of publicly owned and operated facilities has been lessened because the City now no longer has surplus power seeking an outlet. Nevertheless, the opinion is held by many that the full measure of benefit from public operation will not be achieved until monopolization of electric service within the City is complete.

The best evidence of the physical growth of this utility is contained in the statistics of energy generated, purchased, and sold. This evidence is given in Table IV. The increase in peak load is also shown because from it may be gained an appreciation of the dependence of the municipal utility upon the generating facilities of the Edison Company.

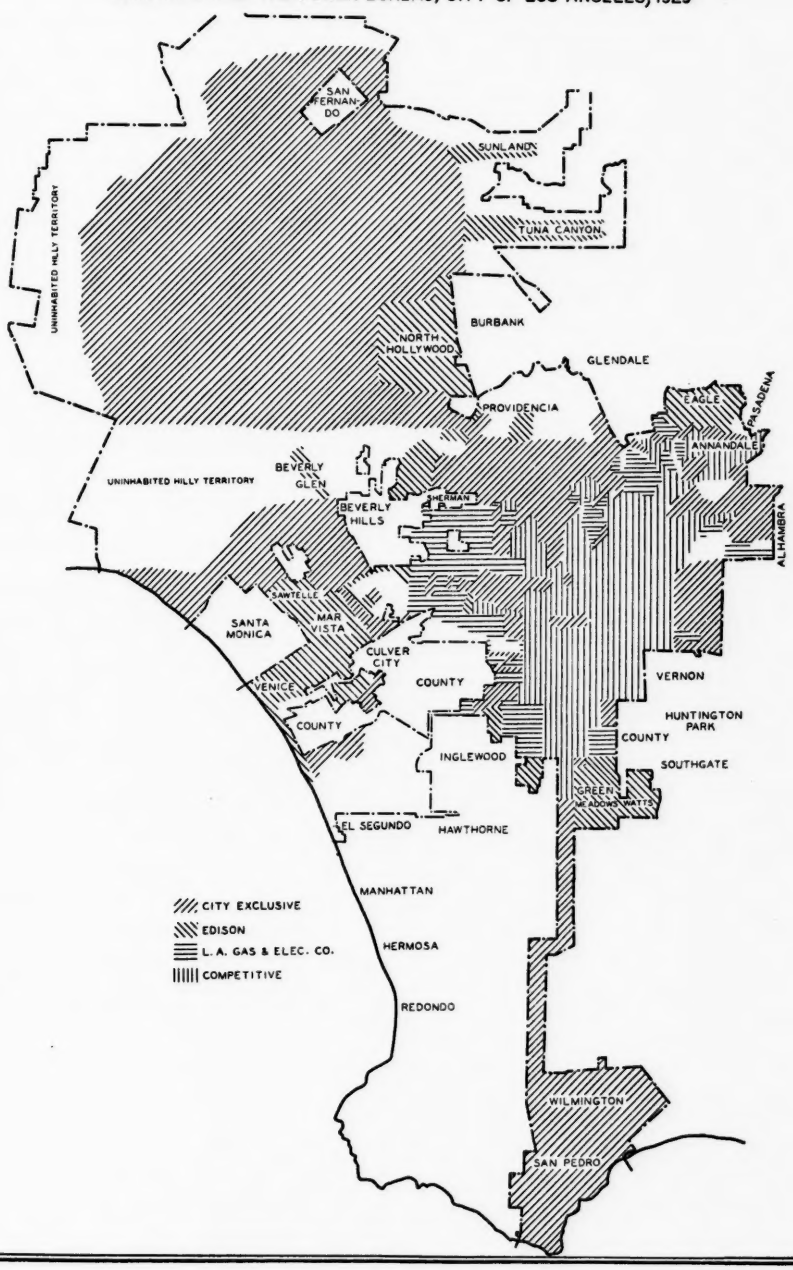
The period of eight years since June 30, 1923, has not been marked by many operating or service changes of special

TABLE IV. ELECTRICAL ENERGY GENERATED, PURCHASED, DISTRIBUTED, AND SOLD

Year	Energy Generated by Municipal Power Plants in Kw. Hrs.						Energy Purchased in Kw. Hrs.	Total Energy at Central Receiving Points in Kw. Hrs.	Total Sales in Kw. Hrs.	Peak Demand in Kw.
	San Francisquito No. 1	San Francisquito No. 2	San Fernando	River Power Plant	Franklin Canyon Plant	Total Generated				
1917..	14,359,000	.....	.....	.....	.....	14,359,000	6,967,956	20,343,376	14,784,817	25,155
1918..	92,552,400	.....	.....	5,446,886	.....	97,999,286	55,784,632	146,606,540	107,236,622	35,355
1919..	129,896,500	.....	.....	10,987,580	.....	140,884,080	57,381,962	190,496,018	149,024,339	41,851
1920..	119,689,600	.....	.....	6,591,570	.....	126,281,170	104,018,941	223,598,301	182,453,575	49,256
1921..	120,994,700	68,036,000	.....	5,454,910	495,000	194,980,610	91,702,667	273,697,307	224,071,405	54,200
1922..	136,580,000	77,944,000	.....	9,492,280	7,733,000	231,749,280	83,028,978	298,917,346	236,280,278	61,815
1923..	143,500,600	80,644,000	21,563,000	6,579,570	8,363,000	260,650,170	128,932,020	369,842,813	324,050,381	79,316
1924..	110,507,100	59,201,000	27,810,000	1,430,010	9,506,000	208,454,110	235,418,655	426,321,650	357,922,525	98,945
1925..	91,129,900	51,658,000	23,586,600	1,511,350	8,076,000	175,961,850	268,914,749	435,547,454	367,917,979	101,162
1926..	114,553,500	63,731,000	27,632,000	1,741,740	6,817,000	214,475,240	284,852,990	488,538,323	412,497,450	109,860
1927..	117,111,300	57,650,000	26,051,000	3,117,300	7,133,000	211,062,600	342,994,795	540,149,033	468,542,934	121,900
1928..	145,939,700	61,751,000	32,199,000	2,874,300	6,789,000	249,553,000	360,170,291	594,646,841	523,895,264	133,300
1929..	129,837,900	77,552,900	31,018,000	1,815,200	7,684,000	247,908,000	430,580,134	660,125,001	587,120,193	153,200

CHART VII

DIVISION OF THE MARKET FOR ELECTRICAL ENERGY BETWEEN PRIVATE COMPANIES AND THE POWER BUREAU, CITY OF LOS ANGELES, 1929



significance. A new City charter changed the name of the governing body from Board of Public Service Commissioners to Board of Water and Power Commissioners in order to designate more clearly their duties. Otherwise, the organization remained unchanged with Mr. Mulholland and Mr. Scattergood in charge respectively of the Water and Power Bureaus. On December 1, 1928, after more than 50 years of service with the water supply system, Mr. Mulholland resigned as general manager and chief engineer of the Water Bureau. He was succeeded by H. A. Van Norman who had been in the service of the Water Bureau since the days of aqueduct construction. For a short period, that is to say for the fiscal year 1929, the bifurcated division of responsibility was eliminated and Mr. Van Norman served as general manager of both utilities, with F. E. Weymouth serving as chief engineer of the Water Works and E. F. Scattergood as chief electrical engineer. The original organization and division of responsibility appears now to have again been restored.

Both the earlier and later Boards were composed of five members. Until the new charter went into effect, the term of office was four years. At present commissioners serve a term of five years with staggered expiration dates. They are appointed or removed by the mayor subject in both appointment and removal to the approval by majority vote of the Council.

The general powers and duties of the Board are such as are usually exercised by the board of directors of a private corporation. They are empowered to hold, regulate, and control all property for the production and distribution of water and electric power. It is their duty to construct, operate, maintain, extend, manage, and control such utilities and they are empowered to acquire and take property by purchase, lease, condemnation, or otherwise. Since publicly owned and operated public utilities in California are not subject to the jurisdiction of the California Railroad Commission, the Board also fixes the rates to be charged for water or electric energy for use within or without the City, subject, however, to the approval of the Council by ordinance. A general rule for the guidance of the Board in fixing rates is provided, the material part of which reads as follows:

"Such rates shall be so fixed at least every two years; provided that, except as hereinafter otherwise prescribed, such rates shall be of uniform operation, as near as may be, and shall be fair and reasonable, taking into consideration, among other things, the nature of the use, the quantity supplied and the value of the service; provided, further, that the rates inside the City may be less, but not greater, than the rates outside the City for the same or similar uses."

It is, therefore, important to note that the Board is, in effect, both a regulating and a managing agency subject to the superior control of the municipal Council as the legislative arm of a public corporation, the City of Los Angeles.

Railroad Security Yields to Investors: 1924, 1926, and 1928*

By HARRY G. GUTHMANN

WHAT has been the yield basis upon which railroad obligations have been available to investors during the past decade in years unmarked by exceptional disturbances? The answer to this question, which is the object of this study, has not only investment interest but also throws light upon the related question of what railroads might have to earn in order to attract new capital for investment.

Any selection of years is open to some criticism, but the years 1924, 1926, and 1928 appeared to offer a maximum of interest and value. Of the more recent years, 1930 was rejected because of depression earnings, 1929 because of deranged security markets, and 1927 because of the exceptional losses of some roads caused by the Mississippi flood. Referring to the Standard Statistics record of high-grade railroad bond yields for the 31 years from 1900 to 1930, inclusive, the average yield is found to be 4.5%, and two-thirds of the years lying in the middle were included in the range of 4.0 to 4.8%. The average yields for 1924, 1926, and 1928 shown by this series were 4.8, 4.5, and 4.3%, respectively.

Importance of Roads Selected. After the years had been selected, a list of railroads was next made up. It included 31 of the largest roads in the United States.[1] The combined capital structures of these leading railroads are shown in Table I in comparison with those of all Class I roads as reported to the Interstate Commerce Commission. The 31 totalled an amount equal to 70% of all Class I roads. The bulk of the roads not included in the selected group were lesser roads controlled by those in the group, as in the case of the Cleveland, Cincinnati, Chicago & St. Louis (Big Four Route) controlled by the New York Central, and the Chicago, Burlington & Quincy jointly controlled by the Great Northern and the Northern Pacific. The two largest railroads not so accounted for were the Chicago, Milwaukee, St. Paul & Pacific and the Seaboard Air Line. These two companies, eliminated because of their financial troubles, would account for about 4% of the total capital structures of Class I roads.

Another test of the importance of the selected group is found by comparing their interest, dividends, and surplus earnings with the similar amounts for all Class I railroads combined. This comparison is made in Table II, without attempting to eliminate intercompany payments, which tend to swell the totals. The totals for the selected roads rose from 73% of all roads in 1924 to 75% in 1928.

* The writer is indebted to Paul E. Wallendorf and Robert C. Turner for assistance in preparing and checking the data for this study.

[1] The selected roads were the Atchison, Atlantic Coast Line, Baltimore & Ohio, Central of New Jersey, Chesapeake & Ohio, Chicago & Northwestern, Rock Island, Delaware & Hudson, Erie, Great Northern, Illinois Central, Kansas City Southern, Lehigh Valley, Louisville & Nashville, Missouri-Kansas-Texas, Missouri Pacific, New York Central, Nickel Plate, New Haven, Norfolk & Western, Northern Pacific, Pennsylvania, Pere Marquette, Reading, St. Louis-San Francisco, St. Louis & Southwestern, Southern Pacific, Southern, Texas & Pacific, Union Pacific, and Wabash.

TABLE I. COMBINED CAPITAL STRUCTURES
(Millions of Dollars)

A. 31 Selected Railroads

Type of Security	1924		1926		1928	
	Amount	Percentage	Amount	Percentage	Amount	Percentage
Bonds	$7,489	51%	$7,583	49%	$7,483	46%
Preferred stock	896	6	911	6	1,034	6
Common stock	4,091	27	4,205	27	4,446	28
Surplus	2,417	16	2,891	18	3,263	20
	$14,893	100	$15,590	100	$16,226	100

B. All Class I Railroads in the United States

	1924		1926		1928	
	Amount	Percentage	Amount	Percentage	Amount	Percentage
Bonds	$10,686	49%	$10,627	48%	$10,586	45%
Preferred stock	1,726	8	1,750	8	1,873	8
Common stock	5,822	27	5,935	25	6,207	27
Surplus	3,553	16	4,234	19	4,681	20
	$21,787	100	$22,546	100	$23,347	100

Bond Yields. Many minor bond issues were necessarily omitted in the study of yields because of a lack of price data. Such small issues were generally of but modest importance. Any advantage they might enjoy through an underlying lien might well be offset by low marketability so that their yields probably would resemble those of the larger reported issues, into which they tend to be refunded as the years pass. Other bond issues, having conversion privileges or whose call price prevented a normal yield basis, were excluded from the study. After making these eliminations, over 80% of the funded debt of the selected railroads, exclusive of equipment trust obligations, remained suitable for the purposes of this study. Equipment trust obligations were segregated for special consideration.

TABLE II. INTEREST, DIVIDENDS, AND SURPLUS EARNINGS
(Millions of Dollars)

A. 31 Selected Railroads

Type of Security	1924	1926	1928
Interest on bonds	$341	$342	$338
Preferred dividends	32	38	46
Common dividends	209	253	288
Surplus earnings	196	316	260
Total	$778	$949	$932

B. All Class I Railroads Combined

	1924	1926	1928
Interest on bonds	$533	$511	$515
Dividends	320	431	405
Net increase in surplus	209	355	321
Total	$1,062	$1,297	$1,241

Table III shows the median yields of the bond issues which survived the elimination process after they had been grouped on the basis of Moody's ratings for 1928. (Each yield was computed from the arithmetic mean of the high and low prices for the year.) The median was selected as a more representative type than the usual average, or arithmetic mean, since it avoided the distortion which would have resulted in a few instances from the inclusion of extreme variations. The median yield of the Aaa bonds in each of the three years was somewhat higher than the average yield of the 15 high-grade bonds used in the construction of the Standard Statistics series already referred to.

TABLE III. MEDIAN YIELD PERCENTAGES AT AVERAGE MARKET PRICES FOR BONDS OF LEADING RAILROADS*

Year	Aaa	Aa	A	Baa	Ba
1924	4.92	5.38	6.15	7.35	9.74
1926	4.65	4.95	5.35	5.95	7.03
1928	4.49	4.65	4.90	5.05	5.89

*Grouped on basis of Moody's 1928 ratings.

Dispersion of Bond Yields. In 1924 the high yields, particularly in the case of the less well-rated bonds, reflected the distrust which still surrounded rail securities after the troubles of the post-war inflation. The spread among the yields of the several groups was very great in this earliest year and diminished steadily down to the last year.

The extent to which these middle yields are representative of the bond

market for these 31 railroads is shown in part by the quartile ranges (Table IV) within which the middle half of the cases fell. The dispersion of yields was least among the bonds of the highest rating and diminished to a marked extent between 1924 and 1926, and but little between 1926 and 1928. The decline in yield differences between bonds of different ratings, which appeared in Table III, is also seen in these quartile range figures.

TABLE IV. QUARTILE YIELDS FOR BONDS OF LEADING RAILROADS*

	Aaa	Aa	A
1924 First quartile	4.80%	5.15%	5.90%
Third quartile	5.08	5.75	6.80
1926 First quartile	4.55	4.82	5.18
Third quartile	4.75	5.07	5.75
1928 First quartile	4.38	4.55	4.83
Third quartile	4.58	4.80	5.10

*Grouped on basis of Moody's 1928 ratings.

Although the study included some weak railroads, the bonds studied were, on the whole, highly rated. Table V shows between 55 and 60% of the issues were in the highest class (Aaa), with practically all of the remainder rated either Aa or A. Additions to the 1924 group were the result of new issues, while losses occurred not only from retirement but also from a rise in the market price to the callable price, which rendered an issue valueless as a measure of long-term bond yields.

TABLE V. RATINGS OF BOND ISSUES INCLUDED IN STUDY*

Year	Aaa	Aa	A	Baa	Ba	Total
1924	105	30	28	6	1	170
1926	97	33	36	6	1	173
1928	95	36	35	5	1	172

*Moody's 1928 ratings.

Equipment Trust Certificates. Equipment trust certificates, as previously stated, were studied separately. Outstanding issues are not easily studied partly because their serial maturities make quotations, which are currently reported on a yield instead of on a price basis, rather less satisfactory—maturity influencing yield considerably at times—and partly because their market is wholly on an over-the-counter basis. Quotations of new issues are somewhat easier to obtain and appear to be at least as representative as similar quotations for existing issues. The average yields for all equipment obligations sold during the years 1924, 1926, and 1928 were 4.94, 4.71, and 4.27, respectively.[2] Because these certificates, when the obligation of a railroad, are ordinarily of such uniformly high quality, classification was believed to be unnecessary.

Because of the serial maturity, yield differences may appear among the several maturities of a single issue.[3] Such differences are most marked in periods of extreme credit ease, such as in 1924, when call money and commercial paper rates are extremely low. At such times the shortest maturities, those from one to three years, sell at distinctly lower yields than do the longer maturities, because of the special demand of commercial banks and others seeking shortly-maturing, liquid commitments.

Preferred Stock Yields. The preferred stocks of this group of railroads

[2] Summarized from reports of new security issues in the *Commercial and Financial Chronicle.* These average yields agree closely with the corresponding figures of the Baltimore & Ohio Accounting Department studies, which showed the average percentage yields to the public as 4.945, 4.71 and 4.31 for these three years. The percentage yields of all other railroad bond issues sold to the public in the years 1924, 1926, and 1928 were 5.38, 5.10, and 4.60, respectively.

[3] The great bulk of these equipment trust issues have a longest maturity of either 10 or 15 years. In 1924 the proportion of 10-year serials to 15-year serials was approximately 40 to 60. In the years 1926 and 1928, serials with a final maturity of 15 years were even more common, constituting over 80% of all issues.

included an exceptional number with features which prevented their dividend yield at market price from indicating correctly an ordinary investment return comparable with the bond yield figures just presented. Conversion or

TABLE VI. AVERAGE PREFERRED STOCK YIELDS OF LEADING RAILROADS*

Year	Aaa	Aa	A	Baa	Ba
1924.....	5.36	5.84	6.67	7.46	7.58
1926.....	4.94	.....	5.29	6.43	6.57
1928.....	4.66	.....	4.88	5.58	5.43

*Grouped according to Moody's ratings for the given year.

participating features, rights to subscribe to new common stock issues, callable provisions, absence of quotation material, failure to pay dividends, or a market price which included an accumulation of unpaid back dividends eliminated the majority of the issues.[4] Out of an original list of 27, only 14 were deemed suitable in 1924 and only 8 in 1926 and again in 1928. These remaining preferred issues, shown in Table VI, were sufficiently large and active, and enjoyed a sufficiently free market to suggest that their yields were probably not very different from what a larger selection would have shown had they been available. (Each yield was computed from the arithmetic mean of the high and low prices for the year.) An exception is found in the 5.43% yield for the 1928 Ba rating which was lower than the 5.58% yield for the Baa rating. The former was the yield of the St. Louis Southwestern preferred. The lower yield for the former appears to have been temporarily abnormal. Recently its dividend was passed, indicating the validity of its lower rating.

Comparison of these preferred stock yields with the bond yields shown in Table III reveals smaller yield differences among the stock yields of different ratings. Preferred stocks with the highest rating offer a higher yield than the most highly rated bonds, although the reverse is true for some of the yields of the preferred stocks and bonds with the lower ratings. Assuming the data are adequate, such an anomaly might be attributable either to some inadequacy of the ratings or some idiosyncracy of the market. Bonds with an Aaa rating might sell to yield less than Aaa preferred stocks because of legal restrictions requiring certain institutions and fiduciaries to confine themselves to the former, thereby giving rise to an artificial market situation not justified by strictly investment considerations. With the removal of restrictions upon preferred stock investments by life insurance companies in New York, a new fashion is introduced which would tend to wipe out such unwarranted yield differences.[5] Indeed, with dividends exempt from the federal normal income tax and bond interest fully taxable, the yield on market price should be somewhat higher for bonds than for stocks of equal quality, the exact opposite of the actual situation among the higher-grade issues.

The lower yields of some preferred stocks as compared with those of similar bonds of low rating may be caused partly by the income tax factor just mentioned

[4] Issues were eliminated in one or more of the three years for the following reasons: (1) convertible—Chesapeake & Ohio, New Haven, Reading, Wabash B; (2) participating—Chicago & Northwestern, Illinois Central, Wabash A; (3) subscription rights—Baltimore & Ohio, Nickel Plate, Reading; (4) call provision—Nickel Plate, Illinois Central, Pere Marquette; (5) not quoted—Atlantic Coast Line (small issue), Lehigh Valley (small issue), Texas & Pacific (owned by Missouri Pacific); (6) dividends unpaid—Missouri-Kansas-Texas, Missouri Pacific; (7) dividend accumulation—Missouri Pacific.

[5] A comparison of high-grade preferred stock and high-grade bond yields, as computed by Standard Statistics, shows a diminished differential in recent years.

and by a tendency to rate second-grade bonds more leniently than second-grade preferred stocks. In the absence of further evidence, a final conclusion as to the influences at work would be unwarranted.

Common Stock Dividend Yields. The results for the common stocks of these leading railroads are less satisfactory than for the fixed-income securities because their prices were measured only in relation to the then current dividends and earning power.[6] The figures showed the same general decline, however, in the return offered the investor at going market prices.

The dividend yields at the average market price (average of year's high and low) are reported in Table VII.[7] The median, or middle, yields are shown in the first column, followed by the quartiles that show the range within which the middle half of the yields fell, and in the last two columns are the most extreme cases.

TABLE VII. DIVIDEND YIELDS AT AVERAGE MARKET PRICE OF LEADING RAILROADS' COMMON STOCKS

Year	Median	First Quartile	Third Quartile	Lowest	Highest
1924.....	6.35%	6.03%	7.30%	4.82%	8.45%
1926.....	5.79	5.34	6.55	3.85	8.47
1928.....	4.87	4.57	5.24	3.49	7.30

Not all the stocks paid dividends during the period studied and so the number of cases included was less than the total of 31. The dividend-paying common stocks were 21 in 1924, 22 in 1926, and 24 in 1928. That these stocks were of varying quality may be readily judged from this point as well as the variety of ratings which are shown in Table VIII. By 1928, 17 of the common stocks had improved their rating over that in 1924; 13 were unchanged; and one had a lower rating.

TABLE VIII. RATINGS (MOODY'S) OF 31 COMMON STOCKS

Year	Aa	A	Baa	Ba	B	Caa	Ca	C
1924.....	4	5	9	3	3	1	5	1
1926.....	5	6	7	3	4	3	3	.....
1928.....	4	8	8	3	3	3	2	.....

Common Stock Earnings Upon Market Price. Many will prefer to lay greater emphasis upon the relation of earnings, rather than of dividends, to market price. In Table IX, part A, are shown the median rates earned on the average of the high and low market prices for the year. Assuming the median to be typical, the table shows dividend-paying stocks to have risen from 8 1-3 times earnings in 1924 to 11 times earnings in 1928; the non-dividend-paying stocks rose from under 6 times earnings to slightly under 10 times earnings in the same four-year interval.

The second part of Table IX shows the two quartiles between which the cases making up the middle half fell. The last two columns show the extreme high and low for each year.

Conclusions. The figures presented in this article are intended to give depth to the picture of investment return upon railroad securities. The conventional yield series, usually an average of a very few issues, leaves the reader doubtful as to how representative the results may be.[8] Indeed, such yield series are

[6] Great Northern "preferred," since it was the sole stock issue, was included among this group of common issues.

[7] In order to estimate the degree to which this average of the year's high and low was representative, it was compared with the average of the monthly highs and lows (24 quotations). The results were substantially alike for 1926 and 1928. In 1924 the more inclusive average would have run higher for most and substantially higher (10% or more) for a few cases because of a sharp upturn in the price of railroad common stocks in the last quarter.

[8] The following studies present additional data on railroad bond yields: (1) Fred R. Macauley, "The

(Footnote 8 continued on page 260)

TABLE IX. RATE EARNED ON AVERAGE MARKET PRICE OF LEADING RAILROADS' COMMON STOCKS

A. Medians

Year	All	Dividend Paying	Non-Dividend Paying
1924	13.4%	12.0%	17.3%
1926	13.1	12.6	13.7
1928	9.2	9.1	10.2

B. Range of All Stocks Combined

	First Quartile	Third Quartile	Lowest Rate	Highest Rate
1924	10.7%	15.8%	6.7%	31.1%
1926	11.0	15.9	5.8	20.8
1928	6.6	11.0	4.9	13.4

usually constructed for a special purpose, such as the measurement of the cost of investment credit. The inclusiveness of this study should give a more convincing quality to the results presented. Such an over-all statistical picture should aid in the appreciation of the yield character of steam railroad securities as a class.

Although chosen as not unusual years, 1924, which is the first of the three selected, reflects the aftermath of disturbing war and post-war inflation. The two later years, 1926 and 1928, mark the substantial re-establishment of railroad credit. While to summarize with averages is to risk a diversion of attention from the more realistic details already presented, the following figures (Table X) are added in order that this broad improvement between 1924 and 1928 may be traced.

The average yields of the bonds and equipment trust certificates, based upon a considerable number of issues, are satisfactorily representative. The preferred stock average yields, a simple average of eight issues differing widely in quality, should be interpreted with much more caution. Such figures report the return which investors could obtain upon existing issues, but do not necessarily indicate what railroads on the average would have paid had they used preferred stock on a larger scale in their financing. The common stock average dividend yields, including a variety of qualities for so small a group and with no indication of supporting earnings, must also be used with discretion. The more complete figures on common stock returns given in previous tables show the large variations lumped together in these last given averages.

TABLE X. SUMMARY TABLE OF YIELDS TO INVESTORS ON BONDS, EQUIPMENT TRUST CERTIFICATES, PREFERRED STOCKS, AND COMMON STOCKS OF 31 SELECTED RAILROADS

Type of Security	1924	1926	1928
Bonds*	5.32%	4.91%	4.57%
Equipment trust certificates	4.94	4.71	4.27
Preferred stocks †	6.68	5.70	5.23
Common stocks	6.35	5.79	4.87

*Average of yields for different rating groups (Table III) weighted by number of issues in group (Table V).

†Unweighted average of these eight issues used in all three years (Table VI). Medians were 6.92, 5.67, and 5.23%.

In the opening paragraph the suggestion was also made that such yield material might be useful in determining what railroads would need to earn to attract new capital. The figures in this article furnish the raw material rather than the answer to such a problem. In arriving at an answer it would

Footnote 8 continued from page 259)

Construction of an Index Number of Bond Yields in the United States, 1859 to 1926," 21 *Journal of the American Statistical Association* 27-39 (March, 1926); (2) W. Floyd Maxwell and Ada M. Mathews, "A Monthly Index of Bond Yields, 1919-23," 5 *The Review of Economic Statistics* (Harvard), 212-217 (July, 1923); (3) W. C. Mitchell, "Rates of Interest and the Prices of Investment Securities 1890-1909," 19 *Journal of Political Economy* 270 (April, 1911); (4) John F. Reinboth, "Measurement of Risk in Public Utility Industries," 6 *Journal of Land & Public Utility Economics* 83-93, 295-306 (February and August, 1930).

The Standard Statistics Company's monthly average of 15 high-grade railroad bond yields is probably the most satisfactory series measuring high-grade rail credit. Also see footnote 9 *infra*.

be necessary (1) to decide what years' figures were most representative and how they should be combined or averaged; (2) the proper proportions of stocks and bonds; and (3) the amount by which the cost of selling the securities would increase the cost of the capital to the railroad over the yield to the investor.[9] A discussion of the first two factors would not only carry this paper into the realm of controversy but extend it beyond its original limits into an entirely distinct problem.

[9] The added cost of borrowed capital to railroads attributable to the marketing of securities for the years 1920 to 1930, inclusive, has been covered by the studies of the Baltimore & Ohio Accounting Department, a summary report of which may be had in *Barron's*, April 20, 1931, p. 6. Also see an earlier study by Herbert B. Dorau on "The Cost of Railway Capital Under the Transportation Act of 1920," 3 *Journal of Land & Public Utility Economics* 1-20 (February, 1927).

Distribution Advances With the Motor Truck

By R. E. PLIMPTON

IS the motor truck building a new distribution? The answer to this question is obvious as regards the physical aspects of distribution. But it is not so generally realized that the truck has been largely responsible for other far-reaching changes in distribution and in closely related functions of modern industry. Nowhere is this more evident than in the trucking services now available to retail stores in the smaller towns and cities. These stores, even though 150 or 200 miles away from their urban distributing centers, are much closer to them than were the suburbs of the same centers only 10 years ago.

This article will discuss primarily the use of the motor truck to serve retail stores outside the main distributing centers. The last 10 years, when the largest increase in such truck operation has occurred, have seen also the tremendous growth of chain stores, with retail units appearing in more and more of the smaller cities; and of the factory-to-dealer form of distribution, with its simplification or even elimination of the service rendered by certain middlemen. In the early decades of this century business units were increased in size for the avowed purpose of securing production economies. The merger tendency has continued in recent years, but the main objective has been to develop better and more effective methods of distribution.

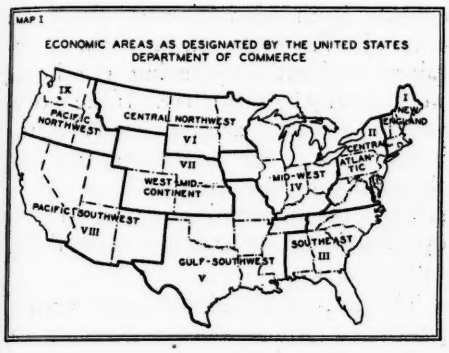
Frequent and rapid door-step deliveries, to the maximum number of retail outlets, is an inherent characteristic of the new distribution. Adequate and yet economical physical distribution must be provided, not only in the metropolitan centers, but also in the smaller places where nearly half the people of the United States live and work and buy at least the major part of the necessities and luxuries of life. In the intensive service demanded by these outlying retail stores the motor truck has been largely responsible for recent distribution history.

Some Significant Recent Developments

Before taking up the "country" operation further, a brief review of some pertinent developments is in point. Among these may be mentioned the rapid increase in number of trucks, their improved performance, the less rapid increase in mileage of improved highways, and the relation of number of trucks and miles of highways to the simplest index of buying power or consumer demand: namely, the growth of population. To discuss these changes in terms of trading territories, the statistics in Table I have been arranged according to the economic areas used by the United States Department of Commerce.[1]

Increased Use of Trucks. Ten years ago nearly 800,000 trucks were registered in the various states of the Union. In 1929 more than four times as many (3,379,544 trucks) were on record and preliminary estimates indicate that last

[1] One state, Tennessee, is divided by the area boundaries. Consequently 1/3 of its population, truck registrations, and miles of highway are included in Area III, and the other 2/3 in Area V.



year (1930) some 3,480,000 trucks were registered.

The growth during the decade has naturally been most rapid in those states which have shown the greatest increase in urban population or in mileage of improved highways connecting the various urban centers. An increase of 66.0% in number of trucks is largely accounted for in the Pacific Southwest economic area by the tremendous growth of California. According to the 1930 Census, the population of that State was 65.7% greater than in 1920 and the mileage of its improved highways almost double.

Another large increase in truck registration (1,257%) is recorded for the Central Northwest economic area. Most of this can be traced to Minnesota, where the population in 1930 was only 7.4% greater than recorded at the previous decennial census. In this State the improvement in highways is largely responsible for, or at least follows closely, the increase in truck registrations.

Other areas, notably New England, have shown a relatively small gain in truck registrations, probably because both the population and mileage of improved highways have not increased as rapidly (from 1920-30) as in the newer parts of the country. In 1920 the thickly settled industrial areas, New England and Central Atlantic States, contained about 35% of the truck registrations, while in 1929 their share had dropped to around 29%. Truck registrations cover all vehicles, whether owned in city or country, and whether operated on city streets or rural highways.

Truck operation, as measured either in number of vehicles or in miles covered per day, has undoubtedly increased much more rapidly on rural highways than on city streets. Definite statistics on this growth are not available, but it is well known that in 1920 the highways did not permit any great amount of truck utilization. At present it is estimated that from ¼ to ⅓ of the truck service is over the improved rural highways, largely in vehicles of owners located in cities and larger towns.

In short, the figures which indicate so radical an increase in motor truck transportation cannot but have effected

TABLE I. GROWTH OF POPULATION AND OF MOTOR TRUCKS FOR NINE ECONOMIC AREAS IN CONTINENTAL UNITED STATES

Area	Population			Motor Truck Registrations			Surfaced Highway Mileage		
	1920	1930	Percentage Increase	1920	1929	Percentage Increase	1921	1929	Percentage Increase
I	7,400,909	8,166,341	10.3	80,950	227,406	181	17,723	27,465	55.0
II	24,371,379	28,612,525	17.5	198,216	757,038	282	43,103	74,819	73.7
III	13,543,805	15,231,042	12.5	59,774	291,441	387	68,740	112,936	64.3
IV	27,759,895	32,111,918	15.5	277,090	958,951	246	143,680	213,651	48.7
V	16,995,487	19,560,389	15.1	61,010	469,297	669	43,529	89,205	104.9
VI	4,219,433	4,475,253	6.1	12,814	173,532	1257	19,933	48,677	144.2
VII	4,199,660	4,520,318	7.8	41,500	153,275	269	6,636	19,966	200.1
VIII	4,648,176	7,135,046	53.6	33,000	250,706	660	20,022	37,991	89.7
IX	2,571,876	2,962,214	15.3	29,275	97,898	235	23,093	37,725	63.4
Totals	105,710,620	122,775,046	16.2	793,629	3,379,544	327	386,459	662,435	71.4

certain revolutionary changes in the practices employed in distribution.

Better Truck Performance. To take advantage of these improved highways, the performance of motor trucks has been notably speeded-up during the last few years. These developments combine to increase the value of truck service, by enlarging the area of a given trading territory.

The transportation surveys[2] made by the United States Bureau of Public Roads, five years or more ago, indicated that about 90% of the tonnage carried by trucks was confined to hauls of 50 miles or less. Movements of 100 miles or more were made by less than 5% of the trucks. Today a substantial proportion of all trucking involves trips of 100 miles, and distances of 500 miles are frequent, with such commodities as used furniture and certain valuable and perishable products. A survey made last year, in 11 states west of the Mississippi River, showed that more than 40% of the trucks on rural highways made daily trips of 100 miles or more.

For this increased working range the modern motor truck is largely responsible. Six-cylinder, pneumatic-tired vehicles travel at from 25 to 30 miles an hour, even in the larger pay-load capacities. This is more than double the performance of the older types, which with their four-cylinder engines and solid tires did well to move at 10 or 12 miles to the hour.

Doubling the speed increases the distributing area of a given center substantially four times because the area served varies approximately as the square of the distance reached by the truck. Operating expense is only slightly increased, since less than half the total expense is in proportion to the miles covered. The increased duty can be obtained without lengthening the hours worked daily by the driver. If the movement is at night, as often happens, the increased area can be covered between the closing of the warehouses or wholesalers in the distributing center, and the opening the next morning of the outlying retail stores.

The greater speed has been accompanied by an increase in carrying capacity. Six-wheeled trucks move pay loads of from 15,000 to 18,000 lbs. Trucks with trailers carry a combined pay load of 40,000 lbs. or more, or almost the equivalent of a full car on the steam railroads. These highway combinations are not uncommon on the wide highways found in the more densely populated states.

With many kinds of merchandise the volume rather than the weight limits the practicable load. Notable increases in the volume handled are possible with the tractor-trailer combinations now operated in many parts of the country. On a truck of 7½ tons capacity, a load of say 1,000 to 1,500 cu. ft. volume may be carried. The combination units can provide two or three times as much space and still remain within the dimensions specified by the state laws.

The future of trailer operation can be judged by the efforts, now in progress, to standardize trailer connections, much the same as car couplings were standardized years ago by the steam railroads. This work is being undertaken by the Society of Automotive Engineers. Its purpose is to make possible the interchange of trailers, which cannot be done at present unless the trailers are made by the same manufacturer. With inter-

[2] In cooperation with state or county highway departments, comprehensive studies of the use of the rural highways were made for Connecticut (1923); Pennsylvania, and Cook County, Ill., and Ohio in 1925; New Hampshire and Vermont in 1926; and the latest, for a group of 11 western states in 1930, complete results of which have not yet been published.

changeable couplings the trailers might be transferred from one truck line to another. Otherwise they must usually be unloaded and reloaded at connecting points, thus greatly increasing the cost of transportation.

Specialization in truck-body construction is another comparatively recent development, making for more economical distribution of commodities. Examples are the tanks, of steel or aluminum, used for handling gasoline and other liquid products; the so-called bottlers' bodies with racks designed to carry soft drink containers; the long trailers bearing from five to eight new automobiles, in some cases with sleeping accommodations for an extra driver; and a variety of refrigerator-type bodies. These last range from the mere insulation of the walls to the type including a refrigerating device or medium.

These various improvements in truck performance have thus increased the range of usefulness of this transportation medium with respect to area of operation and volume and variety of commodities handled.

Improved Highways. From the standpoint of distribution more improved highways are needed, modernization of a considerable mileage of these highways is desirable, and their all-year availability is essential. Surfaced highways now reach a fair proportion of the larger centers. The increase is shown by figures compiled by the United States Bureau of Public Roads:

Type of Highway	1929		1921	
	Miles	Percentage	Miles	Percentage
High type surface*	112,454	3.7	35,874	1.2
Surfaced (gravel or sand clay)	549,981	18.2	350,585	12.0
Unimproved (dirt)	2,361,768	78.1	2,554,835	86.8
Total	3,024,203	100.0	2,941,294	100.0

*Report for 1929 in 1930 issue and for 1921 in 1922 issue of *Facts and Figures*, published by National Automobile Chamber of Commerce.

In another 10 years the present federal-aid system of highways will probably be completely out of the dirt, so to speak. This 193,000-mile network, of which about 40% is now surfaced, will then give access to all places of 5,000 or more population in the United States. While the main highways are being improved, more and more attention will be given to what have been considered secondary roads, with the result that retailers in thousands of much smaller places can regularly and economically "trade by truck" with hitherto inaccessible urban distributing centers.

All this increase in mileage of newly improved highways is encouraging, of course, but also of great significance to the user of commercial motor vehicles is the modernization of thousands of miles of existing surfaced roads. In some cases this has meant widening or rebuilding to handle increased or heavier traffic. In others the roads are being brought up to date by the elimination of railroad grade crossings, the widening and straightening of bad curves, the building of heavier-capacity bridges, the cutting down of severe grades. All these measures tend to permit higher speeds with safety, shorten the distance between given points, and decrease the expense of operating motor vehicles.

All-year availability, another trade requirement, is satisfied by the paved highways. Distribution proceeds with difficulty on the lower-grade roads. Too often these are slow and expensive to navigate when the frost is coming out of the ground, or during spells of rainy weather. Business is also hampered when paved roads are blocked by winter snows. State highways in Connecticut carried twice as much traffic in summer as in winter before an extensive snow-fighting program was put into effect. The summer and winter burdens are now

more nearly equal, although the movement of crops to market and of fresh fruit and vegetables to consumers tends to make summer traffic permanently greater.

The main roads of Connecticut and other northern states are cleared of snow with reasonable promptness after the storms are over. Places where bad drifts occur are protected by snow fences. The United States Bureau of Public Roads reports[3] 8,200 miles of this type of fence in place during the 1929-30 winter, an increase of 40% over the previous winter. In the winter of 1929-30, nearly 200,000 miles of state or local highways were kept open by 36 states at a cost of more than $8,000,000.

These data concerning roads already improved, together with plans for further construction, indicate still more possibilities for truck transportation in the future.

New Trade Horizons

The net result of these recent developments is a widening of trade horizons. The proposals for extensions of secondary roads will increase greatly the number of retail outlets worth cultivating. Nearness to extensive mileages of first class highways is being advertised as an important asset by many cities and towns, and other retail centers are taking a new lease on life with the improvement of these highway facilities. Finally, a new phenomenon, the crossroads town, is coming into existence; it is dependent entirely on its highway connections.

Character of Motor Truck Traffic

The extent to which the motor truck handles the distribution of immediate consumption commodities is brought out in the Bureau of Public Roads surveys. Retail establishments form the principal destination of loaded trucks. Types of origins and destinations, as expressed in percentages of loaded trucks, are given in Table II, in the surveys indicated.

TABLE II. ORIGINS AND DESTINATIONS OF LOADED MOTOR TRUCKS IN THREE TRAFFIC SURVEYS, 1925-6*

	Cook Co., Ill.		Ohio		New Hampshire	
Types of Origin or Destination	Origin	Destination	Origin	Destination	Origin	Destination
	%	%	%	%	%	%
Retail establishments	17.3	25.8	17.3	30.5	14.1	34.2
Wholesale establishments	27.3	10.8	18.0	9.3	20.9	6.5
Original sources of supply: mines, forests	5.9	0.2	6.7	0.5	7.5	0.1
Manufacturing companies	17.9	6.7	19.6	13.2	20.8	12.6
Terminals: rail, truck	6.1	10.2	5.5	3.8	4.5	2.3
Farms	7.5	5.5	12.7	10.3	5.5	5.4
Consumers, such as hotels, institutions	11.7	17.7	8.3	14.4	8.3	18.3
Storage warehouses, stockyards	1.5	1.4	2.5	3.5	3.8	2.2
Construction and repair	4.3	20.8	2.3	10.4	1.7	11.9
Miscellaneous	0.5	0.9	7.1	4.1	12.9	6.5
Total	100.0	100.0	100.0	100.0	100.0	100.0

*From printed reports of surveys of highway systems by the Bureau of Public Roads, United States Department of Agriculture, and Cook County, Ohio, and New Hampshire Highway Departments.

The three types of destination most likely to receive goods for immediate consumption are retail establishments, farms, and consumers. These account for about half of the loaded trucks in Cook County and Ohio. Surveys made at about the same time, five years or so ago, in Pennsylvania and Vermont, showed that 56.8 and 57.5% respectively of the loaded trucks were bound for retail establishments, farms, and consumers. For retail destinations alone the percentages were 28.0 in Pennsylvania and 30.4 in Vermont.[4]

The service rendered to consumers by trucks on the rural highways is further emphasized in Ohio, which is representative of both industrial and agricultural

[3] *Automotive Daily News*, February 20, 1931, page 4.

[4] From printed reports of surveys of highways by the Bureau of Public Roads, United States Department of Agriculture, and Cook County, Ohio, Pennsylvania and Vermont Highway Departments.

activities. The commodities hauled are classified as shown in Table III taken from a 1925 survey.

TABLE III. PERCENTAGE DISTRIBUTION OF MOTOR TRUCK HAULS AND TONNAGE, BY CLASSES OF COMMODITIES, WITH AVERAGE LENGTH OF HAUL, OHIO, 1925*

Commodity	Loaded Trucks	Net Tons	Average Length of Haul
	Percentage	Percentage	Miles
Bread and bakery goods	6.1	1.7	22
Groceries	5.4	6.0	26
Coal	4.6	7.6	7
Wooden containers	4.2	1.4	38
Milk	3.9	5.7	23
Household goods (used)	3.9	4.0	117
Empty cans	3.9	2.2	24
Clay, gravel, sand, stone	3.8	9.3	10
Fresh fruits	3.7	3.5	33
Other dairy products	3.0	1.8	35
Fresh vegetables	2.8	2.1	30
Lumber	2.8	3.6	19
Meat and other packinghouse products	2.6	1.4	25
General freight	1.9	3.4	38
Beverages	1.6	1.8	23
Bottles	1.6	1.1	16
Feed and other mill products	1.5	1.2	14
General express	1.1	3.2	66
Miscellaneous	41.6	39.0	34
Total	100.0	100.0	32

*Printed report of a survey of transportation on the state highway system of Ohio by the Bureau of Public Roads, United States Department of Agriculture and the Ohio Department of Highway and Public Works, 1927.

Food products lead both in percentage of loaded trucks and also in total or net tonnage recorded. Coal and building materials represent a considerable part of the tonnage, but the length of haul is relatively short. The mixed loads, including general freight, general express and miscellaneous, move on longer hauls, the distances they are carried being exceeded only by that given for household goods.

The service of distribution supplied by the motor truck was well described recently by the Hon. R. Goodwyn Rhett,[5] an outstanding banker and business leader of the South. Recounting the economic history of his home city, Charleston, S. C., and its efforts to improve railroad and shipping facilities, Mr. Rhett said in part:

"The motor truck on the hard-surfaced highways has introduced a new element in distribution, which must be reckoned with in the many changes facing business.

"The retailer has had his delivery equipment for distribution in his community. The jobber, the manufacturer, and the farmer have utilized the railway for their distribution. Express and parcel post have come in to aid this distribution and each has in turn brought about minor revolutions. Now comes the motor truck which is managing to distribute to considerable distances more quickly and cheaply than the railway; especially as in the latter case there is often involved one or two supplementary deliveries.

"We only know that cotton is being brought here from points we have never been able to reach by railway. Deliveries are being made by merchants into territory they have not been able to touch for a generation. The highways are crowded with loaded trucks and passenger vans. It is verily the beginning of a new era and one that seems to hold out much for the port and city of Charleston."

Agencies Using Motor Transport

The motor truck is most democratic, serving equally the small business man and the largest corporation. Large-scale businesses, particularly those distributing commodities for immediate consumption, inevitably have undertaken large-scale and widespread operation of motor trucks. Thousands of smaller business units use the truck not only to deliver goods, but also as a warehouse and sometimes as their only place of business.

Physical distribution along the highways, to replenish the stocks of retailers in the smaller cities and towns, is performed largely in trucks carrying the goods of the truck owners. Of all trucks registered and used in city or country, about 82% are of the private or "shipper-owned" type. So-called contract truckers operate 11% of the total number, the

[5] Extracts from address before the Annual Convention of the National Association of Railroad and Utilities Commissioners, Nov. 11-15, 1930, Charleston, S. C.

National Automobile Chamber of Commerce has found, while trucks operated by common carriers make up the remaining 7%. These figures were compiled several years ago,[6] but are believed to be approximately correct at the present time.

A recent study[7] indicates even more shipper-owned trucks, although from state to state the proportion varies considerably.

In Utah 98% of the trucks observed on the rural highways were of the "owned" type, while Nebraska had only 71%. Table IV shows the distribution in other states.

Of the 180,000 trucks observed in this "eleven state" survey, 85.8% were of the private or owner-operated type. Common carriers represented 5.5%, and of these 1.5% were in interstate service.

TABLE IV. DISTRIBUTION OF MOTOR VEHICLES ON RURAL HIGHWAYS IN SELECTED STATES, 1930*

State	Passenger Cars	Motor Trucks				Ratio of Owner to Total Trucks
		Owner Operated	Common Carrier			
			Contract Operated	Intrastate	Interstate	
Nebraska	900	71	14	14	1	71.0%
Idaho	894	77	22	4	3	72.7
Oregon	907	69	10	12	2	74.2
California	901	80	14	4	1	80.7
New Mexico	869	110	16	3	2	84.0
Washington	897	91	9	2	1	88.3
Colorado	867	121	6	5	1	91.0
Arizona	905	88	3	3	1	92.7
Nevada	870	114	1	3	3	94.2
Wyoming	875	120	2	2	1	96.0
Utah	849	148	1	1	1	98.0

*As reported per 1,000 vehicles in 1930 survey conducted by United States Bureau of Public Roads.

The balance (8.7%) were classed as contract-operated. In this same survey 53.8% of the trucks were found to be of 1-1½ tons capacity, and those rated as 2½ tons or less made up 85.8% of the total number of trucks. More than half (58.2%) made daily trip mileages of 100 or less, while only 14.0% covered 200 miles or more per day.

[6] Quoted in *Truck Facts for 1927*, a booklet published by the National Automobile Chamber of Commerce.

Shipper-Owned Trucks

If a special type of truck equipment is required, if the driver must assume duties in addition to mere control of his vehicle, or if the volume of deliveries is sufficient to warrant an out-with-load and a return-empty type of operation, then the trucks are likely to be owned by the company engaged in distribution and to be devoted exclusively to its service.

Gasoline Deliveries. The distribution of gasoline for automobile fuel is made in tank trucks which can be used for few other purposes. Drivers of these trucks must also act as salesmen and at times as bill collectors. Immediate deliveries are often essential to meet the demands of filling stations whose tanks are emptied by an unexpected rush of business. Is it any wonder then that the oil companies have made noteworthy advances in their methods of distribution and that they are such large users of trucks?

One company alone (Standard Oil of New Jersey) owns more than 7,000 trucks which are operated in a marketing territory comprising seven states. Most of these are used to replenish stocks at the filling stations on routes radiating from bulk storage plants. The latter in turn are ordinarily served by rail or water transportation, although a tendency is evident, through trailer combinations, to haul gasoline from central points to local bulk storage plants.

Store-door Sales. As worked out by the National Biscuit Company, store-door selling means not only that the truck driver fills orders as placed at the moment of his call, but also that he picks up stock that may soon become stale and helps the retail customer in window dressing and shelf arrangement.

[7] Western Traffic Survey conducted in 1930 by the United States Bureau of Public Roads.

In its nation-wide system of distribution, this Company "owns about 2,000 motor trucks which are utilized for store-door sales (regular deliveries to retail outlets) and also for transportation of raw materials, supplies, bulk shipments and duties other than those in connection with trade deliveries."[8] These trucks operate from 50 biscuit bakeries and 20 bread- and cake-making units, located in numerous centers throughout the country.

So much depends upon the driver, in the delivery-sales of food products, that there is a limited tendency to give them a semi-independent status. Some of the large baking companies, for example, require the drivers to own and keep up their own trucks, paying them a commission on sales as well as a fixed amount to cover the cost of truck service.

The extent to which such a scheme can be developed is shown by the growth of Jewel Tea Company, which sells to consumers in the smaller towns and along the country highways. With this scattered clientele the problem of distribution is similar to that encountered in reaching many small retailers.

Each Jewel salesman operates a light truck, with which he follows regular schedules over established routes visiting customers once every two weeks. Deliveries are made and orders taken to be filled on the next regular visit. Approximately 1,280 routes are said to be served in this manner. About 800,000 customers in 40 states are called on, with a line of 64 teas, spices, and other grocery products.

Small Retail Outlets. Just as Jewel truck salesmen serve the more or less isolated consumer, so a widespread system of truckers has evolved to meet the requirements of the small retailer of grocery products in city or country. These retail units order goods in such small quantities, their credit is so uncertain, and their locations so inaccessible, that their custom could be handled only at undue expense by the large wholesaler or distributor. Filling in this gap in the distribution structure, are some eight or ten thousand wagon jobbers or truck distributors. In the grocery trade, such a distributor:

1. Operates a truck or a fleet of trucks.
2. Maintains his own warehouse.
3. Supports his own control, office, and bookkeeping system.
4. Calls directly on the retail trade.
5. Supplies retailers with small or large quantities of specialties carried on his truck.
6. Sells for cash only or, in case of some chain stores, "on memo."
7. Usually sells one or two major items and three or four "side items," all of which are non-conflicting.
8. Makes an average of 60 calls per day.
9. Services his trade once, twice, or three times weekly, depending on location.
10. Knows retailers intimately.
11. Sees that every retailer is adequately stocked, but not overloaded with each item carried on his truck.
12. Makes sure these items are well displayed either on counter, in window, or both.
13. Receives for this service approximately 20% discount from the manufacturer whom he represents.[9]

The manufacturers, whom the wagon men represent, are often those doing a local or sectional business, so that their factories serve also as distribution centers. Other types of wagon distributors deal directly with established wholesalers. In either case the stock is replenished after each day's deliveries. This means that the rural territory served is limited in extent. One Cleve-

[8] *Barron's*, March 2, 1931, p. 26.

[9] "The Wagon Man Distributor and How He Operates," *Advertising and Selling*, April 4, 1928, p. 38.

land wagon jobber, for example, goes out through the country until his customers are about two miles apart, then returns homeward on another highway, making calls along the way. The wagon jobber on a small scale and the grocery wholesaler on a larger scale usually concentrate on the distribution of prepared or packaged foods.

Three other groups of specialists may be mentioned, although space does not permit a detailed description of their operations. These are the produce trucker who caters to the demand for fresh fruits and vegetables; the truckman merchant who buys direct from the grower and sells where he will; and the livestock trucker who purchases a load and sells it to the stockyards or packing plant.

Cost Elements. The expense or actual cost of motor transportation varies widely with such factors as the type of business and the efficiency with which the trucks are operated. A large grocery chain may pay about 2% of its gross sales for trucking between its warehouses and retail units. At the other extreme are certain kinds of wholesale produce dealers whose trucking represents more than 90% of their total operating expenses.

In the distribution of fuel for automobiles the final truck movement may be sponsible for nearly 20% of the cost at the filling stations. According to Walter Teagle, president of the Standard Oil Company of New Jersey,[10] gasoline delivered in New Jersey costs:

	Cents per gallon
State tax	3.0
Filling station	4.0
Railroad transportation	0.5
Tank-wagon transport	2.0
Refineries	5.2
Miscellaneous	1.3
Total	16.0 (to consumer)

The efficiency of truck use depends to a great extent on the volume of goods to be delivered. When five leading food-products manufacturers were merged (in 1929) as Standard Brands Inc., one of the main reasons was said to be that all of them could take advantage of the well-established and far-reaching delivery sytem built up by the Fleishman Yeast Company. The parent organization is now reported to have more than 3,000 trucks. These operate out of 900 urban centers, and cover 16,300 other cities, towns, and villages. Deliveries are made at least twice a week and in many cases daily to more than 60,000 bakeries, hotels, and restaurants, and to 300,000 grocers. The Company uses public carriers to serve 36,000 additional places.

For efficient operation, and hence economies in truck service, the trucks must be kept loaded, summer and winter, on return as well as outgoing trips. The large oil companies meet this problem, in part, by distributing fuel oil in winter, thus offsetting the drop in the demand for automobile fuel.

When a given locality is both a consumer and producer of similar goods, a load may be secured in both directions. One grocery chain makes two deliveries a week to its stores within 100 miles of Buffalo, N. Y. On the return trip its trucks pick up warehouse stocks from canneries and manufacturing plants, the expense for cartage being allowed in lieu of the usual freight charges. The same return-load practice, with produce or packing-house products, is sometimes followed by wholesalers who operate their own trucks.

To secure the effect of a return load, large distributors make deliveries on circular types of routes, so arranged that when each truck is, let us say, half-empty

[10] *Automotive Daily News*, May 14, 1931, p. 4.

it begins to serve retail stores on its way to the city of origin. Largely by following this method, grocery chains have developed their trucking services, so as to give the required frequency of delivery, at comparatively moderate unit costs.

The wide variation in these unit costs, on different routes, is indicated by the experience[11] of a company delivering ice cream over 11 routes:

Route	Stops per Day	Miles per Day	Gallons Delivered per Month	Delivery Cost per Gallon
A	58	32	4,411	$0.24
B	20	110	760	.76

On 10 routes (excluding "B", the longest) the delivery cost averaged only $0.35 a gallon. This was about 50% more than the cost of "A", the shortest route, but was less than ½ the cost on the longest route. Comparative figures of this kind, which are kept as current records by the better-organized owners of trucks, should lead to a reduction in unit costs on the more expensive routes. One obvious remedy would be to increase the volume of ice cream delivered along such routes. Or, if that is not practicable, the next thing might be to take advantage of purchased delivery service, which ordinarily is available in great profusion and variety.

Private or Contract Carriers

When the purchase of trucking service is contemplated, a private or contract carrier may be engaged to furnish an exclusive service. Or, if the volume is small and deliveries required only irregularly, the truck hire may be for the trip or shipment. A number of types of hired service are available:

1. Truck rental service means that the shipper furnishes the driver, while a contractor owns and maintains the trucks. These may be identified with the shipper's name. Payment is usually made according to a flat daily or weekly charge, plus an extra amount established by the miles traveled in the period. This system involves complete use of the trucks, and has been applied mainly in a few of the larger metropolitan centers for routes in the city or in nearby suburbs.

2. Companies making deliveries over wide areas may hire operators of small trucks at each distributing center. This practice is followed to a great extent by grocery chains, although some of them have their own trucks, particularly in the cities where their warehouses are located. The "hired" truck service of the grocery chains is highly developed. Separate routes are organized to make daily deliveries of bread, twice-a-week deliveries of staples or dry groceries, three-times-a-week deliveries of fresh fruits and vegetables. One of the larger chains serves even its country stores with daily deliveries of all these commodities. In 1930 the largest grocery chain spent about $25,000,000 for truck distribution. Approximately 1,000,000 truck loads were handled to its 16,000 retail units, from 60 warehouses scattered over 34 states.

3. Many contract truckers are specialists, limiting their work to a single commodity—such as furniture, gasoline, or dressed meat, sometimes for a single shipper. Highway deliveries of automobiles, by tractor-trailer combinations, have been thus described:

"Within the last fifteen months, a veritable mushroom growth has taken place in what are known as contract carriers of new automobiles from factory to dealer. Such carriers use a long trailer truck capable of hauling from five automobiles on single deck trucks, to eight on double deck machines. They drive up to the automobile factory,

[11] Cited by A. J. Scaife in *Society of Automotive Engineers' Journal*, February, 1931, p. 242.

turn over the dealer's check for new cars, and obtain a cargo equivalent to two or three freight cars, with practically no more effort than it takes to park an equal number of new automobiles in a ramp garage."[12]

One Detroit automobile manufacturer is said to have quotations from 10 different firms or companies. Typical rates which include full insurance are given for truck hauls from Detroit in Table V. These rates are based upon a one-way haul, and will undoubtedly be materially reduced when return loads are available. Such a load is now being offered into Detroit, in the form of worn-out automobiles, which are returned to the Ford Motor Company for junking. From $2 to $5 a car is paid the truck operator for this return haul.

TABLE V. TYPICAL RATES FOR TRUCK HAULS OF AUTOMOBILES FROM DETROIT, 1931*

Destination	Highway Miles	Rate per Delivered Automobile
Akron, Ohio	185	$16.00
Cleveland, Ohio	185	16.00
Grand Rapids, Mich.	156	13.50
Chicago, Ill.	276	22 to 25
Hartford, Conn.	769	45 to 63
Houston, Tex.	1,567	89 to 151
Tulsa, Okla.	1,025	62 to 95
Miami, Fla.	1,477	85 to 144
Portland, Me.	929	52 to 81

*_Wall Street Journal_, February 27, 1931.

4. For the national distributor perhaps the most far-reaching truck service is that offered by merchandise storage warehouses. Most of these warehouses have operated trucks for years to provide local or city deliveries. The extent to which they will handle shipments to the retailers' doors in outlying places is shown in the Warehouse Directory, published in the January, 1931, issue of *Distribution and Warehousing*. This lists nearly 3,000 warehouses in the United States, located in 955 different cities. As there are only about 4,000 warehouses in all, and less than 1,000 cities of 10,000 or more population, the distribution shown in Table VI may be taken as representative.

TABLE VI. GEOGRAPHICAL DISTRIBUTION OF WAREHOUSES FURNISHING COUNTRY TRUCK SERVICES, 1930*

Economic Area	Warehouses Listed		Giving Country Truck Service	
	Number	Percentage of Total	Number	Percentage of Total
I	183	6.2	93	6.8
II	772	26.1	332	24.4
III	185	6.3	75	5.5
IV	799	26.9	357	26.3
V	348	11.8	153	11.3
VI	103	3.5	60	4.4
VII	142	4.8	78	5.7
VIII	280	9.5	135	9.9
IX	144	4.9	80	5.7
Total	2,956	100.0	1,363	100.0

*Compiled from Warehouse Directory, published in January, 1931 issue of *Distribution and Warehousing*.

Nearly half the warehouses listed, it will be noted, offer a delivery service to outlying points. The proportion is greater on the Pacific Coast, and somewhat less in the eastern part of the country. These warehouses in general are better equipped to handle city trucking, and this forms the greater part of their trucking work. When the country deliveries are required only intermittently, or in small volume, as frequently happens, the warehouses will ordinarily turn them over to a public or common-carrier trucking company.

Public or Common Carriers

The first common carrier of freight on the highways was an individual who had faith that a regular truck service would be welcomed and patronized by the shipping public. An organization unto himself he was, the one truck being his "stock in trade." Another pioneer was the small bus operator, making perhaps one round trip a day from a country town to the nearest city, and eking out his scant revenue from passengers by fees he charged for purchasing goods and delivering them to his local stores or consumers. From these beginnings have developed the parcels service given in many parts of

[12] *Wall Street Journal*, February 27, 1931.

the country by bus companies and truck operators working on regular schedules. The state of Kansas, for example, records[13] 236 truck lines and 84 bus lines operating into, out of, or through, the following cities:

	Truck Lines	Bus Lines	1930 Population
Concordia.....	11	1	5,791
Dodge City....	16	5	10,060
Emporia.....	22	5	13,687
Hutchinson....	25	4	27,080
Kansas City....	34	15	122,327
Lawrence.....	19	8	13,708
Salina.....	21	12	20,156
Topeka.....	40	17	64,005
Wichita.....	48	17	111,039

The intercity bus services perform a double duty in the physical distribution of commodities. For the distributor and merchant they carry parcels up to 100- or 150-lb. weight, over the longer and more frequently served routes that have resulted from consolidation, increase in patronage, and opening of improved highways. The result also is to bring more and more customers into the cities and towns where various routes converge.

The new bus routes now join important trading centers instead of supplying the connection between small towns and the central city. The new condition improves the bus load factor by increasing the possibility of loads in both directions.

More Consolidations. In the last five years particularly, the highway carriers have shown striking tendencies toward consolidation into stronger operating units. The California Railroad Commission reported 682 truck and bus operators in 1925, while in 1929 only 535 were listed under its jurisdiction. This 21.6% decrease in number of operating companies was accompanied by an increase of 22.1% in revenue reported, and of more than 50% in investment. Consolidations continued in 1930, with only 501 operators listed. The growth for a five-year period (1925-29) is shown in Table VII, compiled from reports of the California Railroad Commission.

Elsewhere the larger truckers are handling the greater part of the business. Three truck operators under the jurisdiction of the Minnesota Warehouse and Railroad Commission took in about 45% of the revenue reported in 1928, the first full year of regulation. The remainder was split among 68 small truckers. A rather complete picture of the Minnesota situation is presented in Table VIII abstracted from reports for 1928.

California and Minnesota are predominantly agricultural sections, so that the truck operators carrying merchandise on trips outbound from distributing centers have developed return loads of fruits, vegetables, and other farm products. In an area of a more industrialized type, the truck traffic will include not only the general merchandise consigned to retail establishments, but also a considerable proportion of unfinished goods, moving from one factory to another. But the problem of obtaining maximum loads on each highway trip still remains.

Operating truck trains of 20-tons' capacity, one company serving 1,000 miles of highway in an industrial territory, carried an average load of only 4.07 tons per train last year. The average was 3.5 tons per train the previous year. By the elimination of unprofitable rates, this company increased its revenue from $3.32 per ton in March, 1929, to $7.00 per ton in January, 1931. Operating expenses on the train-mile basis

[13] Data furnished by C. H. Benson, secretary, Public Service Commission of Kansas, in personal letter to author dated December 29, 1930.

TABLE VII. SUMMARY OF 1925-1929 FINANCIAL REPORTS FOR AUTO STAGE AND TRUCK CARRIERS UNDER JURISDICTION OF CALIFORNIA RAILROAD COMMISSION

	1929	1928	1927	1926	1925
Investment	$33,208,737	$32,550,630	$29,263,339	$27,037,012	$21,979,280
Total number of vehicles	5,000 (est)	4,794	4,660	4,531	4,018
Revenue	25,714,654	25,614,532	23,078,059	22,451,647	21,055,990
Expenses	23,962,171	24,083,948	22,089,668	21,341,416	19,672,531
Net revenue	1,752,483	1,530,584	988,391	1,110,231	1,383,461
Source of revenue					
Passenger	$11,995,049	$12,344,467	$11,143,842	$10,419,032	$10,227,109
Freight	9,232,812	9,249,698	8,461,104	8,903,352	7,662,827
Mail	487,403	478,557	445,441	484,854	584,166
Express	1,724,904	1,382,565	1,486,526	1,358,463	1,395,359
Miscellaneous	2,274,606	2,159,245	1,541,146	1,285,946	1,186,531
Total	$25,714,774	$25,614,532	$23,078,059	$22,451,647	$21,055,990
Number of carriers					
Commodities only	229	269	310	305	252
Commodities and passengers	245	203	224	246	301
Passengers only	61	85	86	104	129
Total	535	557	620	655	682

were 40.72 cents, of which 9.38 cents went for stations and 3.69 cents for pick-up and delivery. These figures are for the year 1930, when the company's trucks covered 1,678,210 miles and its trailers, 2,405,730 miles. Few motor freight companies have attained the size of this Michigan operator, with its 50 tractors, 23 trucks, and 104 trailers. It also owns 47 busses, with which passenger service is supplied to the same general section covered by the truck routes.[14]

[14] From address on "Truck Operation and Costs" by O. H. Degener, secretary, Southern Michigan Transportation Company before Central Electric Railway Accountant's Association, Feb. 26, 1931, South Bend, Ind.

Motor Truck Terminals

Terminal expense, it will be noted from the figures just cited, is nearly ⅛ the total cost of operation. Stations require 23% (9.38 cents) and the closely related pick-up and delivery service takes 9% or 3.69 cents. This is probably more money, absolutely and relatively, than most truck companies spend for terminals, but the figures do illustrate a widespread development. The day is rapidly passing when the same truck is used for the line haul over the highway

TABLE VIII. SUMMARY OF 1928 FINANCIAL REPORTS FOR CERTIFICATED TRUCK OPERATORS IN MINNESOTA

	All Operators	Company A	Company B	Company C
Trucks (trailers), number of	179 (15)	12 (6)	22	23 (7)
Total tons capacity	452	43	64	83
Miles of route	4,700	132	401	351
Miles operated	3,496,463	392,813	493,410	529,614
Tons carried	132,041	10,921	17,287	33,080
Total investment	$686,086.37	$100,000.00	$ 75,000.00	$133,292.29
Gross revenue	904,482.98	82,114.42	142,122.25	184,056.24
Operating expenses	732,383.50	73,531.42	152,844.58	145,848.62
Total taxes	47,726.05	4,455.58	6,309.75	8,444.21

and also for pick-up work at the distribution center. For the truckers the individual collection was slow and expensive, since heavy trucks had to be sent to different parts of the city to pick up any shipment, no matter how small. For the shippers the early methods caused the congestion of their docks and loading platforms with a large number and variety of trucks.

The development of truck terminals is not only one solution of this double difficulty, but also a constructive force in building up transportation by truck. Its possible uses and advantages are many. First of all, a separate collection service can be given to larger truck operators, or with a number of small operators using a single terminal. A few light trucks, working regular routes, collect small shipments for several routes or operators. These shipments are sorted at the terminal and loaded in delivery order on the line truck. Larger shipments, 1,000 pounds or more, may be picked up by the line truck, just as the railroads provide trap-car service for shippers with spur-track facilities. Or, if the shipper prefers, he may use his own trucks for movements to the truck terminal, in which case he ordinarily receives a slight reduction in rates.

The modern truck terminal is much more than a center to collect and transfer shipments; it is also a central office for the truck-operator tenants and a clearing house for truck transportation information. Records and billing of shipments are handled, and a traffic-promotion service is provided to canvass city shippers on behalf of all truck lines entering the terminal.

Publication of complete rate tariffs is another terminal function. Motor-freight rates to 400 communities in six states are included in the tariff issued by one terminal in St. Louis. From this terminal truck service is given by 41 companies. Their rates include a charge which protects shippers against fire, theft, and other road contingencies, and C. O. D. shipments are delivered at a small additional charge.[15]

Also with terminal service available, the small truck operators are left free to concentrate on the line or highway haul, and to cultivate the merchants or other consignees along their routes. They capitalize on this personal contact, by persuading outlying retailers to specify shipments by truck line, and by securing orders to be turned over to and filled by the city distributors.

Large trucking companies, on the other hand, establish terminal facilities in the smaller towns, as part of their traffic-building program. If their managers and executives live in the city distributing centers, they frequently place employees in these smaller towns to act as their agents, with the promotion of traffic as the important part of their work. These agents may drive a light truck to make local collections and deliveries. Or a transfer or warehouse company acts as such an agent, using its local connections to attract business and its warehouse as a transfer station. The line trucks can then continue to concentrate on through movements.

The truck terminals in the distributing centers play another part in securing "ship by truck" orders. Agents at outlying points, or even the retailers themselves, telephone rush orders into the terminal, which relays them to the various wholesalers or distributors. This

[15] In St. Louis alone there are nine truck terminals, according to a survey made by the Industrial Club. Other cities, Grand Rapids, Louisville, Indianapolis, Sioux City, each have a central terminal, where the greater part of the local motor freight is cleared.

service does not take the place of the salesman, or of the orders he telephones in, but has proved especially valuable for perishable merchandise, and for emergency shipments of repair parts for machinery and automobiles. In a sense the wholesaler has permanent and interested representatives in a large number of outlying places. These agents or truckers may be very useful, when the territory cannot be reached frequently and economically by traveling salesmen.

Terminals have also aided in the development of truck traffic, secured by distributing railroad carload shipments. Given confidence perhaps by their ability to serve local shippers, the trucking companies are beginning to go farther afield, and to establish working relations with distant shippers. The larger forwarding companies, manufacturers doing a national business, chain store organizations, all are taking advantage of truck facilities by consigning carload shipments directly to the terminal. The contents of the car may be stored in a warehouse attached to the terminal for later subdivision, or more likely, are at once broken up to fill orders previously placed by the outlying retailers.

Suitable terminal facilities are an aid in creating the much desired return load. The line trucks can just as well bring in the products of small factories along their routes, or certain types of farm produce. These can then be concentrated into bulk shipments for movement by rail or water to larger and more distant markets. The factories are usually convenient to truck routes and farmers can deliver their produce to platforms on the main roads, just as many of them now do with cans of milk. It is then picked up by the line truck and hauled into the city terminal. Some produce is already being secured by the trucker, from collecting agents located in the smaller towns, to whom the farmer delivers his produce.

Finally, in broadening its activities to include storage facilities and the distribution of carload shipments the truck terminal has taken over in part the service performed by local specialists, operating a storage warehouse and a city cartage system. These specialists moved the goods from the railroad freight station, stored them awaiting shipping instructions if necessary, and then moved them again for shipment as less-than-carload railroad freight to the final retail destination.

Of the warehouses listed in the 1931 directory of *Distribution and Warehousing*, 430 (14.5%) reported some form of motor-freight activity. Truck lines were operated by 176 warehouses, truck terminals by 160, while the others (94) were operating both truck lines and terminals. The geographical distribution is shown in Table IX.

TABLE IX. NUMBER AND PERCENTAGE DISTRIBUTION OF WAREHOUSES ENGAGING IN MOTOR FREIGHT SERVICES, 1930*

Economic Areas	Warehouses Listed		Motor-Carrier Warehouses	
	Number	Percentage	Number	Percentage of Total
I	183	6.2	26	6.1
II	772	26.1	56	12.9
III	185	6.3	29	6.6
IV	799	26.9	117	27.0
V	348	11.8	69	15.8
VI	103	3.5	19	4.4
VII	142	4.8	34	7.8
VIII	280	9.5	46	11.6
IX	144	4.9	34	7.8
Total....	2,956	100.0	430	100.0

*Compiled from Warehouse Directory, published in the January, 1931 issue of *Distribution and Warehousing*.

These figures indicate, as might be expected, that in the Southwest and on the Pacific Coast a relatively larger proportion of the warehouses have entered the motor-freight business. Some of these warehouses were sufficiently farsighted to pioneer common-carrier trucking services in the days prior to state regulation. Others have bought out the

original owners and thus have acquired the quasi-monoply granted by state law to certain classes of truck operators. The warehouse is then used as a terminal and its trucks for collecting shipments.

The alternative, which many of the warehousemen have adopted, is to take over the service required at the city center by the truck operators. Instead of forcing the operators to establish terminals and duplicate the local cartage or drayage facilities, a section of the warehouse is set aside to receive truck shipments, and its employees sort them out and transfer them to the line trucks. For this service, and for the collection and delivery performed by the local trucks of the warehouse company, the truckers pay a small fee based upon the volume of freight handled and covering the labor of billing, receiving orders, and soliciting shipments.

Highway and Rail Carriers

One of the most significant developments in freight transportation during the last decade has been the joint or through movement of commodities from factory or warehouse direct to the stores of the retail merchants. The truck is used ordinarily for the last part of the haul, the railroad or water carrier for the intermediate and usually the longest portion of the movement, while either the truck or the railroad freight car is loaded at the shippers' premises.

Short and long-haul phases of this development may be considered. In the first, the trucks pick up or deliver the goods within a limited urban territory, the rail service being handled by local or way freight trains. Long-haul service, on the other hand, may involve through movements over thousands of miles, by rail or water, with the truck reaching out from local break-bulk centers to points 200 miles or more away.

As far as the shipper is concerned, the short-haul type of complete service amounts essentially to an extension of the trap or ferry-car service hitherto given to a limited number of large shippers. By using the motor truck the rail systems, steam or electric, can receive from, or deliver goods to, a much larger number of shippers. This service is usually given only within a limited downtown zone, and for shipments of considerable volume and revenue. Small shipments may be picked up in the outskirts of the city, but at an extra charge. The truck movements are performed in general by local drayage companies, acting as agents for the rail or water carriers. In other words, less than carload shipments are handled on much the same basis as express and parcels post matter, except that the first moves in freight trains and the other two in passenger trains.

Door-to-door service is offered in the hope of "Winning Traffic Back from the Truck Lines." In an article [16] bearing this title the management of the Texas & Pacific Railway is said to have concluded:

> "That a fair share of the less-carload traffic could be won back to the rail line by offering shippers a coordinated rail-truck service, combining the convenience of the motor truck with the all-weather dependability of rail transportation, which without considerable further investment would provide a fuller utilization of the already existing rail and terminal facilities."

Steam railroads in New England, Texas, California, Oregon, and Nebraska have adopted this coordinated service in one form or another. Electric lines in California and in several of the central western states are also offering their shippers a line haul by rail, with truck collection and delivery at ter-

[16] *Railway Age*, Motor Transport Section, May 24, 1930.

minals. So far the joint service has been given mainly to intrastate shipments. Its extension to interstate shipments is being considered, however, by some of the larger steam railroads. Joint tariffs have been filed with the Interstate Commerce Commission, although in one case the application seems to have been withdrawn before the Commission took any action. A newspaper comment on this follows:

"Although no reason was given for the abandonment of the plans, it was indicated to be due to the inability of the Southwestern lines to get together on definite territory to be covered. Another factor mentioned was the disagreement over charges proposed for hauls outside established limits."[17]

Forwarding Company Activities. Joint-service of the long-haul variety has been developed mainly by the freight forwarding companies, in cooperation with truck lines and the steam railroads. To a limited extent the United States Post Office Department is using the truck for line hauls to off-railroad points.

"Throughout the Pacific Southwest motor routes operated by the Postal Service handle considerable quantities of parcels post, not only for the general consuming public, but for retail stores as well. In these areas which are dependent upon motor transport, it is by no means uncommon for the merchant to receive flour, sugar, canned goods, clothing, and many other lines from wholesale centers by parcels post."[18]

Two or three railroads, it is true, own trucking subsidiaries, so that they furnish the equivalent of a forwarding service, direct to the premises of retail consignees. The St. Louis Southwestern (Cotton Belt) has highway freight and passenger services in Arkansas and Texas. The Chicago, St. Paul, Minneapolis & Omaha, through its trucking subsidiary, covers 22 routes out of Sioux Falls, S. D.

The truck lines of the Omaha, according to the president[19] of that Railway, are designed to capitalize the sales energy of Sioux Falls jobbers and distributors. Because of the increase in volume of goods distributed by truck from Sioux Falls, the freight station there has shown a constant increase in revenue. In a later statement[20] President Gray indicated that the railroad brought in car-lot shipments consolidated for various small communities. By breaking up these shipments at Sioux Falls, and delivering them by truck a day or more is saved in time of delivery, compared with all-rail haul, and in some instances the distance of haul is cut down substantially.

Formed originally to combine small rail shipments into carload movements, the larger forwarding companies have expanded their activities beyond the railroad lines, to furnish shippers with a pick-up service by truck at the larger centers, and to use the common-carrier or contract trucker in making direct deliveries to retailers off the railroad or beyond the point where carload lots can be handled economically.

The place of the forwarding company in distribution, and its use of truck services, is well set forth by the Railroad and Warehouse Commission of the State of Minnesota:[21]

"These carloading or forwarding companies have enabled the jobber or wholesaler located in Chicago and St. Louis and

[17] *New York Times*, June 7, 1931.

[18] *Commercial Survey of the Pacific Southwest*, United States Department of Commerce, 1930, Domestic Commerce Series No. 37, p. 529.

[19] Carl R. Gray, Jr., address before Motor Transport Section, American Railway Association, June 20, 1930, at Atlantic City, N. J.

[20] *Wall Street Journal*, February 5, 1931.

[21] General order (1927) in the matter of applications for certificates of public convenience and necessity to operate as auto transportation companies for the transportation of property, etc.

the larger eastern markets to distribute less-than-carload class shipments into Minnesota and the Northwest in carload quantities. These consolidated cars generally are shipped into the Twin Cities and Duluth and distributed from those points for Minnesota and northwest destinations. Where the less-than carload freight is destined to points without these cities in the state of Minnesota the distribution is made by the agent of the carloading company or some other trucking company, which is paid for its services by the freight forwarding or carloading company, except of course where distribution is made by rail at l. c. l. rates. If a regularly established auto transportation company makes it economical for the forwarding company to use its services, such transportation agency is employed. If the freight is of sufficient quantity, contract may be made with one of the large transfer companies for distribution, or the forwarding company may make its distribution through its own agent, such as the Murphy Transfer & Storage Company or the Colonial Warehouse Company. When the distribution is made by either a contract company or by the forwarding company's agent the contract or agent truck carrier is not subject to regulation under Chapter 185, Session Laws 1925, (the law regulating common-carrier truckers) under the Boyd decision.

"The point to bear in mind is, that unless the local jobber has at his command a regular auto transportation company for distribution, his competitor in the larger centers can ship through the freight forwarding companies and distribute by contract trucks or trucks of the forwarding company's agent, while the local jobber must distribute by rail. This assumes of course that the local jobber is not distributing in a certain territory in sufficient quantity to engage a contract truck himself or place his own trucks on the highway."

In the larger cities the forwarding company branches may use their own trucks for local deliveries, while contract or common-carrier vehicles handle shipments consigned to retailers in the surrounding territory. But there are many places, which are important as break-bulk centers, but still are not large enough to provide the volume required to support a forwarding company branch. The practice in such smaller centers is to create an agent, who reships the occasional carloads consigned to him by the forwarding company.

This agent has usually been a merchandise warehouse, which provides a city trucking service, and turns the goods over to truck operators for outside movements. The warehouses are still handling distribution for many national business houses, particularly when it is desired to keep "spot stocks" for nearby customers.

Forwarding by Truck Terminals. The truck lines, through their city terminals, may act as agents to receive carload shipments, and at once subdivide them among retailers located along their routes. In other words, a joint rail and highway service is provided, although no joint tariffs or through bills of lading are required. The benefits of such a service, as supplied by 14 truck terminals in Indiana (all located at warehouses with steam rail track connections) have been described,[22] as follows:

"Rail carloads of matches from Duluth, Minn. reach one of the 14 Indiana warehouses located as nearly as possible in the center of the territory into which the contents of such rail carloads are consigned for immediate delivery to merchant consignees.

"These cars are unloaded at the warehouse and all contents of carload ready for delivery to consignee are placed from car on track to motor-truck outbound platform. These consignments are loaded from truck platform into the transport truck and delivered di-

[22] From testimony of Tom Snyder, Indianapolis, at hearing of Interstate Commerce Commission on Docket 23,400, Coordination of Rail and Highway Transportation, Chicago, January 5, 1931. Mr. Snyder appeared as president of the Central Union Truck Terminal, Inc., of Indianapolis, which he described as a freight-collecting, freight-forwarding, freight-shipping chain of 14 motor truck terminals individually incorporated in Indiana.

rectly to store-door of consignee during the same day on 50% of the contents, and not later than the following morning on all deliveries.

"A number of in-warehouse handlings, a warehouse charge, a number of out-warehouse handlings, a cartage charge to rail l. c. l. terminals, a number of delivery handlings and a cartage charge from rail l. c. l. terminal to consignee's door, and the time required to do this, have been avoided.

"This same rail-truck coordinated service is now being rendered to all consignees located in 600 Indiana towns and cities in the distribution of fruits from Florida and California; paper from Wisconsin, Michigan and Canada; magazines from New York City; fish from the Atlantic and Pacific seaboards; vegetables from the southern states; shingles from the northern end of the state of New York; and lubricating oil from distant refineries."

Summary

Highways, or the trucking services they bear, are not only essential to, but also have made possible, the continued prosperity of retail stores in the smaller towns and hamlets. Trucking services are essential factors in plans for increased production, more intensive coverage, or more rapid distribution of commodities. Just as the retailers along a given highway will turn more business to the city from which frequent truck deliveries are available, so the place at the hub of good highways has a decided trading advantage over its neighbor lacking these facilities of distribution.

Naturally, therefore, it is in the interest of distribution centers to foster and promote organized truck services throughout their trading territories. This has not long been the case. When the truck services were irresponsible, uncertain, and merely a convenience to a few customers, the wholesalers and distributors had good reason to frown upon the struggling truck operators, and to refuse them patronage if they could possibly avoid it. Their changed attitude in the last few years is one of the best indications that trucking has undergone notable improvements.

Truck operation offers service to the small retailer, whose requirements are so small or whose location is so inaccessible, that his business is not welcomed by the large distributor. The wagon jobber is reaching out farther and farther to serve these retailers. Or the retailers in a given locality can supply their own transportation by clubbing together to send a truck owned by one of them at regular intervals to the nearest distributing center for supplies, produce, and merchandise.

Long-Distance Service. Still another factor to be considered is the manufacturer or distributor distant from trading centers at the focus of trucking routes. Lacking warehouse facilities or sales representation at such centers, the distant manufacturer has had to depend upon a through rail movement, even for small shipments. His local competitors could use the best combination of rail and highway. This condition is likely to be temporary, however, since the larger trucking companies are already creating business for themselves through mail or other solicitation of manufacturers outside their immediate operating territory.

The chain-store organization and the large distributor in general have a certain advantage in that their delivery systems are devoted primarily and usually exclusively to their own service. In the thickly settled metropolitan sections specialists have appeared catering to a number of shippers, no one of which could justify its own exclusive delivery service. One large cartage company in Chicago, for example, offers a daily delivery to retailers in 125 cities or towns on 8 routes within a radius of

30 or 40 miles. Its delivery zone is limited by the distance a driver can cover and still get back to the Chicago headquarters within a normal working day. This suburban delivery serves the same customers for whom the cartage company hauls merchandise between warehouse and railroad freight station.

In concluding it may be remarked that highway delivery was first an effect, but now bids fair to become a cause, of the trade practice known as hand-to-mouth buying. The operation of trucks over the rural highways received its first great impetus in the deflation days following the World War. With more prosperous times, the truck was used more and more for the frequent small-lot distribution of commodities. Its applications have been accelerated, if anything, during the 1930 business depression. At least its services to hand-to-mouth buyers have become steadily of greater importance. Says one authority:[23]

"Nothing is more important for the permanency of hand-to-mouth buying than transportation improvements."

Elsewhere Mr. Lyon generalizes:

"If gains in transportation efficiency can keep in advance of the growth of production and be maintained through periods of exceptional business expansion and decline, it should, more than any other single factor, tend to bring a smoother flow to the movement of goods, to reduce the stock requirements of merchants and manufacturers, to release for other purposes capital invested in supplies and inventories, to make American industry less speculative and more nearly a matter of planning and control."

All this refers with particular force to the motor truck. Highly developed mechanically during the 1920-1930 decade, with creditable beginnings made in its utilization by business and industry, the decennial period just starting promises noteworthy advances both in its construction and application. Not only as a useful instrument of distribution, as treated in this article, but also as a servant of production, the motor truck gives every indication of wider service.

[23] Leverett S. Lyon, *Hand-to-Mouth Buying*, The Brookings Institution, Washington, D. C., 1929, pp. 459 and 470.

Economic Aspects of Conservation

By CONRAD H. HAMMAR

DR. L. C. GRAY writing in 1913[1] performed for the conservation movement the very useful service of drawing to a head the rather loose concepts upon which it was progressing, giving the term itself a definition, and describing and limiting its economic possibilities. His article is one of the earliest treatments of this rather difficult subject by a capable economist well trained in theory. The views advanced at that time have been very generally accepted[2] and, while in the main they are correct, certain worth while additions may be made to the discussion and even some criticism of Gray's concepts.

As an approach to the problem, various definitions of conservation may be considered. Among the first of these is that apparently contributed by Pinchot[3] who is quoted by Van Hise;[4] namely, "conservation means the greatest good to the greatest number and that for the longest time." This idyllic definition was doubtless very pleasing to the common man and served to promote the cause of conservation. However, the unfortunate combination of numbers of people and the time element raises a question in the minds of the skeptical. One feels immediately that average utility rather than total utility—a desirable equality in the distribution of wealth and income at a particular time—is sought here. But, the question arises, would not a population of 200,000,000 people in the United States secure a greater total psychic income from the services and commodities to be derived from production in 1950 than a mere 150,000,000? In fact, if the criterion is to be greatest total income, the ideal as far as numbers are concerned will always be greater than if the criterion were greatest average income. It is impossible to decide from Pinchot's definition which measure he wishes to apply, though the probability is that he desires the largest average income per person rather than the greatest total income.

Without doubt, however, the inclusion of "number" in the definition throws the whole problem of "distribution" into the field of conservation. Ely,[5] following Pinchot and Van Hise, states, "The equitable distribution of wealth and income is then always included as an aim in thorough conservation discussions."[6] No particular harm results perhaps from such inclusion save that it unduly broadens the field of conservation and the work of the conservationist. Further, why not leave these problems of the sharing of income to their traditional place in economic theory, i. e., in the field of distribution? We may then concentrate our attention as conservationists on problems peculiar to that branch of our science. This does not necessitate developing a blind side, for borrowing from other fields is quite a

[1] "The Economic Possibilities of Conservation," 27 *Quarterly Journal of Economics* 497-519 (May, 1913).

[2] See Ely, Hess, Leith and Carver, *Foundations of National Prosperity* (New York: Macmillan Co., 1917), pp. 34, 85, 187.

[3] *The Fight for Conservation* (New York: Doubleday, Page & Co., 1911), p. 48.

[4] *The Conservation of Natural Resources in the United States* (New York: Macmillan Co., 1910), p. 379.

[5] See Ely's contribution in Ely, Hess, Leith and Carver, *op. cit.*, p. 7.

[6] *Ibid.*, p. 3. (Note at side of page) "Conservation means three things: viz., (1) Maintenance as far as possible; (2) Improvement where possible; (3) Justice in distribution."

different matter from including them within one's activity and research.

A second definition of conservation worthy of attention is that of Ely[7] whose beginning paragraph in *Foundations of National Prosperity* is: "Conservation, narrowly and strictly considered, means the preservation in unimpaired efficiency of the resources of the earth, or in a condition so nearly unimpaired as the nature of the case, or wise exhaustion, admits."

This version of conservation is of somewhat dubious value for two reasons. First, the beginning statement alone involves an economic impossibility. The production process, where natural resources are concerned, invariably involves form losing and depreciation. We cannot keep the mine intact if the ore is to be used. Ely fully recognizes this and adds his alleviating statement, but has the mere term "wise exhaustion" really led us very far in an understanding of conservation? Secondly, a definition of conservation, which, strictly interpreted, involves an impossibility, suffers an unnecessary handicap.

Finally, we may return to Gray's definition which may be summed up best in his own words:[8]

"The primary problem of conservation, therefore, expressed in economic language, is the determination of the proper rate of discount on the future with respect to the utilization of our natural resources. . . Conservation as a single principle of action involves the equal importance of future wants and present wants. . . Conservation as a single principle of action is reduced to an absurdity."

This definition has, without doubt, a certain profundity. Conservation does involve the balancing of present and future, but the designation of the rate of discount as the primary problem I am not inclined to admit. Here, as in the first part of Ely's definition, conservation is reduced to an absurdity. It is doubtless profound to point out that, as a single principle of action, conservation is absurd and even more profound to have pointed out that no "single principle of action" can be adopted without the same "absurdity." Human aims, objectives, and activities are necessarily multiple. None can be adopted to the exclusion of all others. Dr. Gray's definition is, hence, subject to the deep fault that it drives "conservation" into an impasse at the very beginning. Indeed, the weakness of the conclusion of his article can be traced directly to his definition of conservation.

This aspect, however, is not the greatest fault of the definition. The proper rate of discount on the future is only half the problem of conservation and not its sole or primary problem. The proper rate of discount on the future stands in the same relation to conservation that time preference occupies in the study of interest. It refers chiefly to the consumption aspect of the problem and fails to take account of the equally important production aspect.

"Where is the proper balance between utilization and conservation?" Dr. Gray[9] asks and follows his question with the disheartening admission that it cannot be answered "without such definite comprehension of the purpose of human existence as has not been vouchsafed the race." He is right as far as he goes, but a consideration of the production aspect of conservation leaves us with by no means so hopeless a conclusion.

To illustrate what is meant by this further aspect, let us examine a specific case. Steward Edward White, writing in the *Saturday Evening Post*,[10] gives a

[7] *Ibid.*, p. 1.
[8] *Op. cit.*, p. 515.
[9] *Ibid.*, p. 515.

[10] "Kidding Ourselves Along," vol. 202, pp. 16-7, December 14, 1929 and pp. 26-9, December 21, 1929.

rather vivid account of what has been happening to the salmon industry of the United States and Alaska. He leaves little doubt but that the continuation of modern practices will see even the present greatly diminished supplies of these remarkable food fish still further depleted. He is quite unequivocal that our present "kidding ourselves along" will shortly result in stagnation in the salmon canning industry because supplies of these fish will be curtailed to the vanishing point. Here is indeed a fit topic for the conservationist. It involves the question of the proper rate of discount on the future. If the present is all important we will continue to take the fish regardless of effect on future supply.

From the standpoint of production, however, the conservation problem is broader than this. It involves also the question of what we can do to increase and perpetuate the supply of salmon. In other words, added to our time preference is the desire for a larger as compared to a smaller income, and this second motive may operate entirely independently of the first, though the two are commonly interdependent rather than independent. This production aspect of conservation may not be of greater importance, but its status is at least coordinate with that of the proper rate of discount on the future.

In the case of the salmon Mr. White proposes the substitution for the present ineffective regulation, a control by statute and competent officials, of the number of fish allowed to reach the spawning grounds. In essence his proposal is that no fishing be allowed until enough salmon have gone upstream to insure adequate supplies for the future. Let me point out that, if by some miracle this greater supply of salmon might have been secured with no waiting, no abstinence, or no discount, the proposal would just as surely (even more surely) be adopted. The motivation arising out of the desire for a larger as compared to a smaller supply is independent of the discount rate and side by side in Mr. White's article are (1) the consideration of the probable cost of the present that is justified and (2) the means to be employed in order to maximize future income. In this article, indeed, the means to be employed to secure a larger as compared to a smaller income are of major importance. Without the reforms proposed the suggestion is that little present or immediate future income will be left to discount. In other words, the cost to the near present might actually be greater without the reform than with it. Yet one can hardly aver that this reform is not a part of conservation.

However, to place Dr. Gray's definition in its best setting, the problem of conservation of our mineral oil resources may be considered. This is a case of a mineral product, the supply of which may not be regenerated and the complete exhaustion of which is often said to be imminent. The primary problem of the conservationist here appears palpably to be what sacrifices of present enjoyment of the products of this resource shall be made to prolong its enjoyment in the future. If there were no possibilities of substitutes and if, after our petroleum was gone, we were to be forced, with folded hands, to put automobiles and trucks into permanent retirement, then this aspect of conservation would be transcendent and complete in itself. However, substitutes are available and, as the failure of our supplies of mineral oils approaches, the attention of the conservationist should be directed toward pointing out means of alleviating the loss. To be sure, this problem of discovering and developing substitutes is partly a matter for the engineer but it

concerns the conservationist as well. That is, instead of being content merely to make the best of a bad situation the conservationist may well direct some of his energy toward providing means for improving the situation. And indeed the conservationists do just this.

Conservation and Utilization

The failure to observe this aspect[11] of conservation has led Gray to certain misconceptions regarding the relation of the utilization of certain natural resources to the utilization and exhaustion of other resources. He says, "water power is not depleted by rational use, and strictly speaking, methods of conservation are unnecessary to prevent its being wasted."[12]

Now if the nature of production was such that from its beginning as a raw material to the finished product water power alone were concerned and if failure to use water power did not mean an added depletion of other resources, then the above statement would be adequate. However, production is as closely interrelated as exchange; if in producing a good you do not use water power you must use coal or wood or some other substitute. Failure to develop water power may not deplete this valuable source of energy but it very surely involves (assuming the same volume of production) depletion of some other resource that must serve as a substitute.[13]

In classifying resources from the standpoint of conservation, then, they fall immediately into two great categories: the exhaustible and inexhaustible. These two main categories are subject to further subdivision as follows:[14]

I. Exhaustible.
   A. Not in themselves renewable; e. g., oil, coal, and minerals.
   B. Renewable through directed effort; e. g., forests, fertility.

II. Inexhaustible
   A. Because practically unlimited in abundance though of varying grades; e. g., cement materials, brick clays.
   B. Because self-renewing; e. g., water power.
   C. Because both unlimited in abundance and self-renewing; e. g., sunlight, tides, wind, and ocean currents.

[11] For discussion involving, but not specifically pointing out, this aspect of the meaning of conservation, see the contribution of Professor Hess in Ely, Hess, Leith and Carver, *op. cit.*, ch. 3.

[12] *Op. cit.*, p. 500.

[13] As one of my colleagues has pointed out, production seldom involves only a single natural resource. Hence, to exploit water power we must use iron, copper, and many other materials, the parent resources of which are exhaustible. The objection is not serious, however; the net exhaustion of those resources that are limited in supply, taking them as a group, is lessened though the exhaustion of particular categories may continue.

[14] To those familiar with the classification employed by Gray an explanation is due regarding the failure to include in the present classification any reference to resources that are "exhaustible in one locality but restorable through the employment of other resources of a different kind or of similar resources in different locations." (*Op. cit.*, p. 510.)

Conservation is concerned with the distribution of income in time rather than with the place of its accruing. Always resources in certain localities will be depleted necessitating a movement to those in other localities and, while the conservationist must be awake to this aspect of the situation, it is a fact to be taken into account rather than one for active inquiry. He limits his search to the possibilities of piecing out future income from resources wherever they may be and he leaves to production and exchange the study of the exploitation, transportation, and incorporation into income of these resources.

Gray vacillates in his application of the above regional concept when he says "even those properties which are scarce and exhaustible, such as potash and phosphorous, may be restored by carrying these elements from other localities. And, although this does not result in absolute conservation—since the total world supply is to that extent depleted—it may represent conservation from the standpoint of the locality in which the restoration is effected." (*Ibid.*, p. 502.) One wonders if there has been "conservation" even in this locality since the potash and phosphorous were hardly purchased for nothing. Thus one who wishes to include this "regional" concept in conservation should

(Footnote 14 continued on page 286)

The problem of the conservationist with regard to these different divisions of resources is quite different. His great services in the case of the exhaustible and not renewable resources are (1) to insure, as Dr. Gray points out, rational methods of use and modesty in consumption, and (2), what is an equally great service, to designate substitutes, particularly those to be drawn from the exhaustible but renewable and the inexhaustible categories. Thus, if iron ore is exhaustible in the not distant future and if cement and brick are only remotely so, the province of the conservationist is to point out this fact and to laud substitution of the inexhaustible or renewable wherever intelligently made.

In the case of the exhaustible but renewable category the concern is to see that supplies of products drawn from them are maintained at a level at least equal to current volume of consumption unless indeed substitutes can be found from either the same category or, better, from the class of inexhaustible materials. Thus to renew our forests for mere structural material would be folly if we saw that cement and brick manufacture supplied our needs at less costs.

The inexhaustible resources, so far from being an inconsiderable concern to the conservationist, should rather occupy a large share of his attention. Any system of production which fails to make a maximum possible use of these inexhaustible resources fails just so far to meet the best in conservation. Failure to use these to the utmost tends to speed the exhaustion of the resources which are by nature limited in amounts. No function of the conservationist transcends in importance that of urging and facilitating the redirection of production so that it draws more and more on the inexhaustible and less and less on the exhaustible. This phase of conservation is not provided for in that description of it which designates the proper rate of discount on the future as the primary concern. But the foresters, in urging reforestation of denuded and idle forest lands, have this aspect in mind quite as much as the discount rate and the cost to the present. Sunlight and rainfall are self-renewing. They enter very largely into the production of wood. Their nonuse speeds the use of other resources, many of them in the category of exhaustible resources. Thus, conservation is as much concerned with the impact of production on the various categories of resources as it is with the time-preference aspect of the problem.

Accumulation and Conservation

With the above concepts in mind it is necessary to modify our views on the clash between exploitation of resources for the accumulation of private wealth and capital on the one hand and conservation on the other.[15] The wide latitude of individual action allowed by an unguarded system of private property and a laissez faire policy has doubt-

(Footnote 14 continued from page 285)

set himself the task of telling why it should not better be left in production and exchange.

In one respect the regional concept, as has been suggested to me by a colleague, may be useful. One nation might set out deliberately to exchange products to which the inexhaustible resources had made the major contribution for those of another nation that were taken largely from the exhaustible categories. The effect would obviously be a net gain, as far as exhaustion of resources (naturally limited and not renewable) is concerned for the nation exporting the products of the inexhaustible resources. Supplies of mineral oil of any particular nations would, indeed, be a fit object of such "conservation" and the supplies of certain rare ores equally so.

However, each nation would still have to decide its policies as far as conservation is concerned with respect to the distribution of its income in time and there seems no need even here to broaden the definition of this term.

[15] For a discussion of the clash between conservation and the accumulation of wealth in private hands, see Gray, *op. cit.*, pp. 504 ff.

less resulted in much economic waste because of its stimulus to haste in production for the purpose of piling up private wealth, and future generations have been shouldered with certain unnecessary burdens. Care must be used in judging the ultimate or even immediate effect of such accumulation, however. Exploitation even of exhaustible resources and the resulting accumulation may have a beneficial effect rather than the reverse on future income. Thus,

". . . in China there are immense deposits of coal which have been kept unimpaired through thousands of years of the history of that exclusive nation. These deposits of fuel should have been used long ago for the industrial development of that backward country. It is true that future generations may profit by the failure of their ancestors to make use of coal. But on the other hand past generations have been deprived of necessary comforts, and many individuals of life itself, and the present generations are suffering for lack of necessities which the proper use of this fuel resource would have provided."[16]

Where accumulation of private wealth and capital has leaned heavily on the exploitation of renewable or inexhaustible resources the case is even more striking. When water power does duty for coal, the quantities of this fuel left for the use of future generations are increased. We have been prodigal with our forests and there has been and still is tremendous waste, but forests are renewable, and if we had not used them we might well have drawn more heavily still upon oil, coal, iron, and other classes of exhaustible resources. Concern over the waste of our timber is warranted but even greater concern should be felt regarding the lack of foresight in failing to provide even that small protection from fire that would have insured a renewal of our forests. This latter fact, even more than the waste, should be bemoaned. Had stock been taken of the possibilities for growing wood and had provisions been made (and many think that the cost of such provisions would have been very small indeed) to insure restocking and continued growth[17] of our forests, we might easily and with profit have made our rates of exploitation and accumulation even more rapid than they were. In fact, had lumbermen known that such provision had been made, their efforts to perpetuate their private supplies, small as these efforts were, might further have been relaxed and timber have been even cheaper than it was.

Accumulations of private wealth by the hasty and wasteful exploitation of exhaustible resources are highly anti-social. When made at the expense of renewable resources they are less likely to be so and can scarcely be anti-social at all when derived from the inexhaustible categories of resources.

Conservation, the Interest Rate, and Value

We are told at the conclusion of Dr. Gray's article that in our efforts to promote the cause of conservation,

"The line of least resistance appears to be in the creation of proper social conditions which will provide the motives of conservation. A most important social condition is the interest rate. In all cases the interest rate must be rendered as low as possible."

This quotation is directly in keeping with the general tenor of Dr. Gray's article and is the logical conclusion of one who looks at conservation chiefly from the standpoint of present and future rates of consumption.

[16] W. N. Logan, *Conservation* (Indianapolis: Pauley Co., 1927), p. 9.

[17] Even now foresters think we have ample land suited for forests and not needed for agriculture to produce reasonably adequate supplies of timber if given only fair attention. See W. B. Greeley and others, "Timber: Mine or Crop," *Agricultural Yearbook, 1922*, pp. 83-180.

When the effect of the interest rate on production is considered, however, the case is not so clear and the blanket suggestion quoted above appears dubious.

We are told[18] that the general effect of a high interest rate, other things being equal, is to increase the rate of present removal (in the case of an exhaustible mine) and the effect of a low rate the contrary. This again is true in general, but the great fault in the principle, as far as its application to conservation is concerned, is that other things are seldom or never equal.

A first effect of a reduced interest rate is to increase the values of natural resources and the effect of these increased values is, again quoting Gray,[19] twofold:

> "first, to increase the quantity of resources that are brought under utilization; and, second, to create motives for economizing those already in use. In one direction the influence is favorable to conservation; in the other direction, unfavorable."

However, this matter of the increasing volume of resources brought under utilization is not the only place where a modification must be admitted. We have only to look at continuous exploitations under a low as compared to a high rate of interest to see a further flaw in the argument.

Suppose now a country with a given supply of natural resources and a given population, and suppose the interest rate, having been 5%, drops to only a trifle above zero. This would amount to the presumption that the marginal cost of saving has become very small and the marginal productivity of capital very low. Let population remain constant in numbers, but (a contrary assumption would be unreal) with indefinitely expansible wants. What would be the effect of this reduction of the interest rate on the total volume of production? To say that it would not be increased would be to imply that human ingenuity was at an end in the extension of the roundabout or capitalistic process. Capital, at only a modicum of cost, would be available in great quantities, and while we are now "digging deep into the fertility of a continent," as far as the exhaustible resources are concerned, we would then be rapidly digging its very heart out.

Hence, while reduction of the interest rate (The fundamental cause in the actual situation would be the increased savings and accumulations of capital.) to near zero would permit us to lengthen greatly our production process, to harness natural forces in ways of which we do not now dream, and to enter upon such an orgy of production that we might all satisfy wants which are never even permitted to emerge in consciousness at present, we might very shortly find ourselves in a very tight place as far as certain natural resources are concerned. It appears that the blanket assumption that low interest rates would be an aid in conservation is not entirely tenable, but certainly in one respect they would be a great boon—namely, in the effect that might conceivably be given to the direction of production. That is, if the reduction of interest rates were accompanied by such a change in the general production process that the brunt of it would fall increasingly on the inexhaustible and renewable resources a genuine gain might result to both present and future generations. In this respect then, the conservationist must support the reduction of the interest rate. With capital in great abundance we might complete rapidly the development of our water power, we might harness the tides, and we could certainly give a larger concern to growing forests.

[18] Gray, *op. cit.*, p. 506.

[19] *Ibid.*, p. 508.

The Task of Conservation

Several paths of effort are open to the conservationist. (1) The first of these is a careful enumeration of the extent of the exhaustible resources and the state of their exhaustion. Not always can this be accomplished with accuracy, but in the face of uncertainty, "it is better to be safe than sorry" and the public will in the main acknowledge the fact. To accomplish this task of enumeration and classification funds and an unbiased authority are necessary. Neither individuals because of their passing interest nor corporations because of their obvious self-interest can be assigned the task. Governments, however, have a continuing and unbiased concern in the welfare of all classes and can and should undertake the work. It cannot be said that in the past this careful enumeration has been done in a systematic manner such that salient facts could be ascertained. We rushed up to the tail end of our public domain, and were not aware of it until after the war. Even now we are largely in the dark regarding the supplies of most of our exhaustible resources. It is suggested that either a separate government bureau undertake the task or, if that is too great a request, that some members of the already existing bureaus be assigned to assemble such data as already exist and recommend collection of other data that are most pressingly needed. The task is tremendous, but that much can be accomplished may be deduced from the fact that even individuals with the slender resources at their command have been able to publish such excellent, but still inadequate, studies as that by Van Hise[20] and the recently published book by Logan.[21]

(2) A knowledge of the stage of our exploitation of the exhaustible resources, however, is not enough. The additional task of pointing out insistently the possibilities of production latent in exploitation of inexhaustible and self-renewing resources is still waiting. Even here a mere enumeration, as in the case of water power and our idle forest lands, may illustrate saliently, first, the latent resources of this character and, second, our neglect of them.

(3) From the standpoint of consumption some results, though they will be meager, may be secured by teaching thrift and abstemiousness. Perhaps more may be accomplished by an effort to popularize those types of consumption which lean most heavily on the least exhaustible resources.

(4) The government, in addition to its task of enumeration, may take an active part in the redirection of production. Governments can normally borrow at minimum rates, and for this reason are in position to engage in developmental projects not financially remunerative to private persons or corporations. The role of the great corporations of today, however, may easily be underestimated, and possibly the larger of them may find it advisable from the standpoint of their own as well as the public interest to go even farther than they have already gone in the promotion of projects based upon the inexhaustible and self-renewing resources. A great share, probably much the greatest share, of the developments of such projects has already been effected by corporations. The part they are destined to play may well be one of increasing importance in this respect since some of them at least appear not illogically to view themselves as well nigh permanent institutions.

(5) A further suggestion is found in a note by King[22] written in 1916 to the

[20] *Op. cit., supra* n. 4.
[21] *Op. cit., supra* n. 16.

[22] "Does Conservation Involve Cost?" 30 *Quarterly Journal of Economics* 595 (May, 1916).

effect that the conservationist must keep a sensitive finger upon the ratio of population to exhaustible resources. Population density, according to King, varies inversely with the number of comforts and luxuries included in the standards of living of the lower-income classes of the population. He indicates a tendency to perpetuate both high and low standards of material comfort. If for any cause population outruns production so that standards must be lowered, there is danger that the new ratio between population and production will be retained. Certain resources or even certain groups of resources will surely be exhausted in time. The conservationist's great concern is to signal the danger point and insist on preparations so that adjustment may be made smoothly and with no reduction in standards of material comfort.

The Meaning of Conservation

To conclude: *Conservation is that branch of economics which seeks to insure to future generations as great an income (or a greater) from the exploitation of natural resources as is enjoyed by the present generations.*

Certain objections to the above definition may be anticipated and answered in advance. First, it may appear to leave the problem of the adequate income status of future generations, as far as natural resources are concerned, entirely too much to the altruism of present generations. Might not the whole matter be put upon a more "businesslike" basis? Neither the accusation of too great altruism nor of lack of a "businesslike" basis is sound, however. The demand is not that individuals should sacrifice their prospect of business gains for the sake of future generations. The life of individuals and perhaps of most corporations is too short. What is asked of the individual is that he be alert to and sympathetic toward all intelligent effort at development of the inexhaustible and renewable resources. Governments, on the other hand, are permanent, and they may well adopt a longer time point of view than individuals. Even for governments the expenditures of great sums in the interests of conservation would be dubious. Uncertainties of the distant future are too large a consideration. However, governments (and individuals in so far as they are part of their governments) should be willing to make that small provision out of present income that will enable the careful and continuous study of present exploitation and the possibilities of changes in methods to make the results more in accord with conservation principles. And further, when the advantages of such a course are quite clearly discernible, the government, either because of its advantageous situation as a borrower or because it alone can advance sufficient means, may undertake certain projects, strictly sound from a business standpoint, which will direct production more toward the inexhaustible and renewable resources.

Second, is there not the possibility that, regardless of any and all efforts that are made, incomes from the exploitation of natural resources may decline? And should not provision be made in the definition for such a contingency? That the possibility does exist can hardly be denied. Nevertheless, there seems little need to take specific account of it in this instance. Certainty as to the future is impossible no matter how careful our provision. The possibility of maintaining or increasing the income from the exploitation of natural resources will always be with us. Hence, a lesser ideal than the one contained in the definition above seems unnecessary.

Apartment-House Increases and Attitudes Toward Home Ownership

By COLEMAN WOODBURY

Part I. Analysis of the Building Permit Data

Introduction

THE rapid increase of multi-family house construction, sometimes referred to in the study as apartment-house construction, and the corresponding decrease in new single-family houses, are two significant economic facts of recent years which have not as yet received adequate analysis. The purpose of this study is to go behind the general fact of apartment-house growth and to discover, if possible, the economic forces and conditions which are connected with it and which seem to be influencing it. The data are figures collected and published by the Bureau of Labor Statistics on *families provided for* in new residential construction of different types for which building permits were issued from 1921 through 1928.[1] The lack of adequate and dependable supplementary data, however, has been the chief obstacle to the analysis. Consequently, several of the most promising hypotheses have had to be abandoned without trial because the facts for classification or for testing a correlation either were not obtainable or bore marks of careless or prejudiced collection, and many of the conclusions which have been drawn have had to be hedged about with qualifications and limitations.

Some indexes were worked out from scattered data and were used as the bases of classifications. As a result the limitations on the resulting figures and their interpretations are often quite numerous. Possibly the discussion in some cases would have been sharpened by leaving out these indexes and their qualifications. Unless the material was hopelessly inadequate, this was not done for two reasons. First, several of the indexes constructed and used as the basis of classifications are checks on each other and the results from the use of one may be interpreted in the light of the facts revealed by the other. In the second place, pointing out these weak places in the available material on housing and urban development and showing what insight and understanding might come from more complete and uniform data will, it is hoped, encourage and aid those individuals and agencies who are trying to add to our body of facts on urban development.

The second part of this article approaches this increase of apartment houses by means of reasons given for home ownership and home tenancy by various classes in the population of one metropolitan region. Although limited to the Chicago area, this method is valuable for three reasons. First, it makes possible a verification of some of the relationships indicated in Part I. Secondly, it gives a rough test of certain possible connections which were not treated in Part I because of inadequate or missing data. Finally, it brings into the discussion certain non-pecuniary considerations which, by their very nature, are not susceptible of treatment by numerical indexes and tests of correlation.

[1] Bureau of Labor Statistics, *Bulletin* Nos. 318, 347, 368, 397, 424, 449, 469 and 500 and *Monthly Labor Review* (June, 1930). Mr. Ethelbert Stewart, Commissioner of Labor Statistics, has been most patient and helpful in supplementing and completing the published material.

The Data of the Study

BEFORE entering upon the main discussion of this first part of the study, the exact nature of the data must be understood. At least six facts are essential to such an understanding.[2] (1) The figures given by the Bureau of Labor Statistics are all based on building permits issued by city officials, not on buildings erected nor on building contracts awarded. (2) The data are for *new* construction and have no reference to the total housing accommodations of the cities. (3) The unit of measurement is the family provided for. (4) The data refer only to contemplated *new buildings* and do not include alterations and remodelings of old structures. (5) Only "housekeeping dwellings" are included, i. e., buildings providing facilities in each suite or family unit for the preparing of food. Hotels, clubs, and lodging houses are not included. (6) Buildings combining residential and commercial facilities are classified as follows: single-family and two-family dwellings with stores combined are counted as two-family dwellings; multi-family dwellings with stores combined are, of course, included with other multi-family dwellings. Row houses and group houses are classified by the number of families provided for between party walls.

The first of these facts requires some elaboration. The advantage of using permit data is the completeness of the reports which can be made by the local officials. All except two or three of the cities in the group studied have building codes and their enforcement gives the building commissioner or other enforcing official the complete record of buildings for which sanction has been sought and obtained. The issuance of a building permit, however, is no guarantee that the structure for which the permit was issued will be constructed or, if constructed, that it will be built in the year in which the permit was given. The percentage of buildings not erected after the permits are issued is probably negligible,[3] particularly in times of fairly brisk construction such as the period (1921-8) dealt with in this study.

Furthermore, present day building codes and zoning ordinances involve a sufficient number of details on which definite information must be given and plans presented before a permit can be issued so that the trouble and cost of securing a permit for a large residential or commercial building tends to check any large surplus of permits. For smaller buildings, on which architectural service is unfortunately rare and on which the regulations are less complex, fees for the issuance of a permit (usually on a cubage or value basis), although seldom acting as a deterrent on building, do tend to discourage premature applications for permits. Moreover, the assumption seems reasonable that the percentage of unused permits, as well as of the separation of permits and building in different years, would remain nearly constant from year to year.

Another possible shortcoming of the permit figures in presenting an outline of a city's housing activity is the practice of laying out subdivisions and building dwellings outside the city limits. In city planning and subdivision this is a major problem; in housing it is a minor one because of the slowness of buildings to follow the wild pace of subdivision. The dependence of modern standards of living of nearly all income and occupational classes on municipal and public utilities and the role of urban land development as a popular specula-

[2] See explanation in *Bulletin* No. 318, pp. 5-11 and No. 449, pp. 25-27.

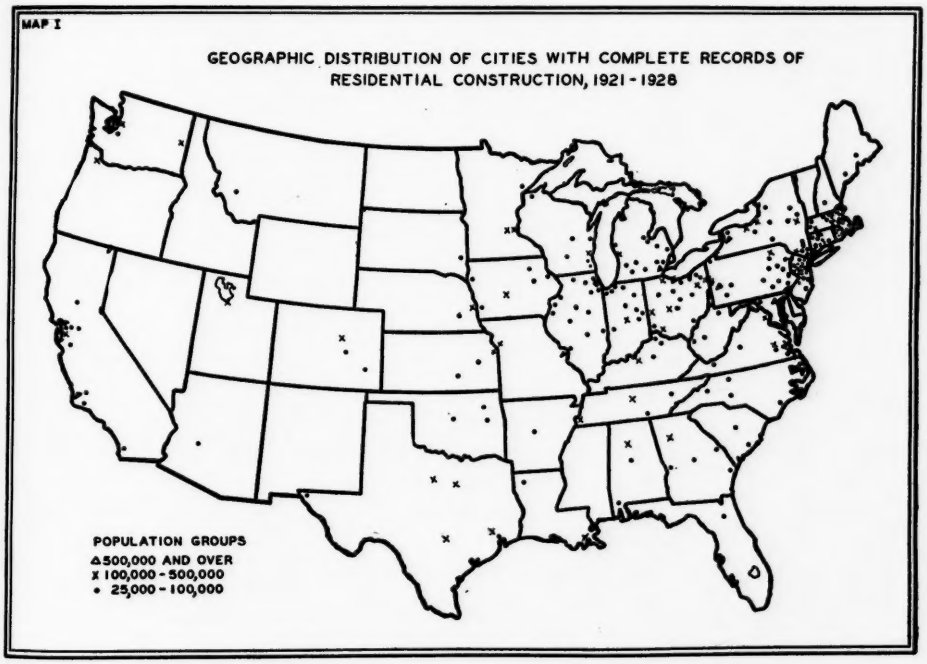
[3] This opinion is based on the experience of officials who pass on permits.

tion account for the lag. Not many people, however susceptible they may be to the real estate dealers' tale of future increments in value, are willing to live without water or sewer connections to their houses. Most of the dwellings which are erected outside municipal limits, however, are single-family units and the permit data would fail by the amount of such building to give the correct proportion to this class of buildings in the new housing accommodations of the community.

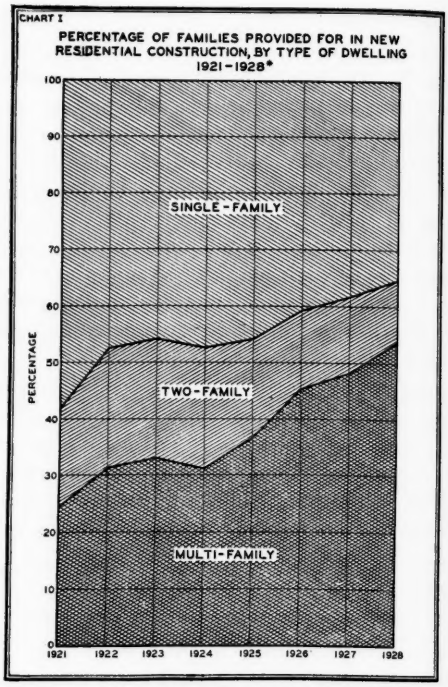
Several parts of this study have appeared in four previous issues of the *Journal of Land and Public Utility Economics*.[4] These articles will be very briefly summarized later but no extended review of them will be made here. As pointed out in the first of these prior articles, the data on apartment-house construction are limited to the years from 1921 through 1928 which was a period of rapid, sustained building operations and to the 255 cities which have complete records for that period. These cities range in size according to the Census of 1920 from 25,202 to 5,678,141 with a mean population of 134,209 and a median of 66,168. Their 1920 aggregate population was 34,223,390 or 63.02% of the total urban population of the country at that time. Map I shows their geographic distribution.

The eight-year period seems at first rather a short time for the measurement of housing trends in cities with such a huge aggregate population. What considerable changes in the total housing situation can be accomplished in

[4] "The Trend of Multi-Family Housing in Cities in the United States," 6 *Journal of Land & Public Utility Economics*, 225-234, 399-408 (August and November, 1930); "Transit and the Trend of Multi-Family Housing," 7 *Ibid.* 36-44 (February, 1931); "Taxation and the Trend in Multi-Family Housing," 7 *Ibid.* 189-198 (May, 1931).



eight years in such a group of cities? The opinion implied in such a question, however, is usually formed without knowledge of the extent of post-war residential construction. These 255 cities permitted provisions in new houses for 3,243,896 families in the eight years from 1921 through 1928. The average size of a family in cities in 1920 was 4.2 persons. If this size of family is assumed to have been nearly constant, housing accommodations were built for 13,624,363 individuals or 39.81% of the 1920 population of the cities in the study from 1921 to 1928. These facts quite clearly bar the dismissal of these data as inconsequential in the general urban housing situation.



*Data from United States Bureau of Labor Statistics.

The Trend Toward Multi-Family Houses

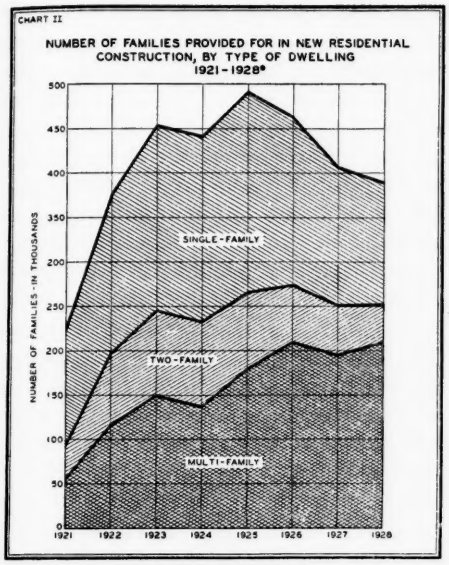
Table I and Charts I and II show, for the entire group of 255 cities, the record in new residential building during the period as indicated by the number of families provided for in buildings for which permits were issued. The most prominent facts in the table and the ones which the remainder of this and the preceding articles try to define and explain are the rapid increase in the proportion of families provided for in apartments from 24.42% to 53.74% of the yearly total of permits for new construction and the correspondingly rapid decrease of families provided for in single-family and two-family houses.

Unfortunately it is impossible to present a complete picture which would show this multi-family dwelling in-

TABLE I. FAMILIES PROVIDED FOR BY NEW RESIDENTIAL CONSTRUCTION IN SINGLE-FAMILY, TWO-FAMILY AND MULTI-FAMILY DWELLINGS IN 255 CITIES IN THE UNITED STATES, 1921–1928*

Year (a)	Single-Family Dwellings		Two-Family Dwellings		Multi-Family Dwellings		Total (h)
	Number (b)	Percentage (c)	Number (d)	Percentage (e)	Number (f)	Percentage (g)	
1921	130,729	58.23%	38,947	17.35%	54,829	24.42%	224,505
1922	178,397	47.43	80,193	21.32	117,547	31.25	376,137
1923	207,631	45.78	96,398	21.25	149,505	32.97	453,534
1924	209,548	47.44	94,703	21.44	137,460	31.12	441,711
1925	225,199	45.88	86,068	17.54	179,516	36.58	490,783
1926	188,093	40.71	64,623	13.99	209,337	45.30	462,053
1927	155,572	38.30	54,951	13.53	195,660	48.17	406,183
1928	136,890	35.19	43,057	11.07	209,043	53.74	388,990

*Reproduced from 6 *Journal of Land & Public Utility Economics* 228 (August, 1930).



*Data from United States Bureau of Labor Statistics.

crease in perspective with the types of houses formerly built in American cities. Many people are of the opinion, however, that before the war single-family dwellings predominated in all except a very few of the largest cities. This opinion is clearly revealed in the following statements from the first reports issued by the Bureau of Labor Statistics on their housing statistics. The data for 1920, although not complete enough nor including enough cities to be used in this study, elicited this statement from the Bureau.[5]

"It is impossible to tell whether or not the ratio of apartment houses to the total number of dwellings has increased materially. It is to be presumed that it has, however, for the table shows many apartment houses to have been built in the cities of 75,000 or less. The building inspectors in some of these cities reported that multi-family dwellings (or apartments) were erected in their cities for the first time during 1920 . . . "

Although all cities reporting in 1920 did not give satisfactory returns for families provided for by multi-family construction, some idea of the relative position of apartments may be gathered from the reports for 191 cities in 1920.[6] Multi-family construction accounted for only 13.34% of 91,071 families provided for by residential construction in these cities.

The next *Bulletin* carrying such statistics and the first one containing accurate percentages on the relative position of the three types of houses, carried a statement which, in the light of the record since 1921, seems to belong to another age.[7]

"When it is considered that these data were collected from cities as small as 25,000 it may be somewhat startling to discover that almost one-fourth of the new family accommodations are in apartment houses. The trend toward apartment houses, which started in the larger cities, is spreading to the smaller ones . . . ."

Measuring Overbuilding During the Period of the Study

One question may be anticipated on the satisfactoriness of "families provided for" in *new* buildings as an indication of housing trends. This question can be raised not only about building permit data but also about any data on new residential construction. To what extent do these data show an actual change in new housing and to what extent do they reflect a misunderstanding of the market by the builders and financiers of the dwellings? In other words, are the various types of houses being used as they are built or are one or two types considerably overbuilt? This question applied to the present study usually implies the belief that apartment houses have been consistently overbuilt to an appreciable degree and that the building permit data, therefore, are "watered" by

[5] Bureau of Labor Statistics, *Bulletin* No. 295, pp. 4-5.

[6] From general table, *Bulletin* No. 295, pp. 26-37.

[7] Bureau of Labor Statistics, *Bulletin* No. 318, p. 9.

the amount of that over-building. Of course, one expects a rather larger percentage of vacancy in apartments than in single-family homes both because apartments, as contrasted with single- and two-family homes, are frequently built in anticipation of demand and because the greater mobility of apartment dwellers requires and encourages more liberal building.

The definite answer to this question which may be put in several ways requires reliable data on vacancies in the different types of buildings. Unfortunately the local and disorganized character of the urban real estate market has so far stood in the way of adequate vacancy surveys in the great majority of cities. It is customary, when such a question as this one is raised, to put forward the usually tacit assumption that overbuilding in any type of house will be corrected in the course of time; that permits would soon fall off in the classes of houses which previously were overbuilt.

This assumption as to the "long-run" action of the market is not entirely sufficient here. Eight years is a relatively short period if the unorganized character of the market is taken into consideration. As pointed out before, this was a period of active building; the sale of real estate bonds was providing a remarkable flow of capital from persons who knew little or nothing about the market conditions into which the new buildings were entering; the general tenor of business was optimistic despite certain disquieting symptoms. It seems reasonable to say that the long-run reaction had not had an opportunity to assert itself fully to check any possible overbuilding of any one type of housing accommodation. Moreover, it cannot be denied that the very lack of accurate information on housing vacancies for whose absence this assumption is offered as a substitute, lengthens the period before the reaction to overbuilding (or underbuilding either for that matter) of any type of structure takes place. This is particularly true in the larger cities where most of the smaller builders operate in only one or two sections of the city and usually have only the vaguest impressions of conditions in other parts of the urban area.

National Real Estate Board Surveys. The only available general survey of market conditions which is even approximately satisfactory for the answering of this question is the "Semi-Annual Survey of the Real Estate Market" made and published by the National Association of Real Estate Boards. The data are supplied by the local real estate boards on forms set up by the department of education and research of the National Association. Among other items they carry two reports which are pertinent here—namely, "residential rents" and the "building situation." The three most pertinent surveys are those dated January 1, 1929, June 30, 1929, and December 31, 1929, which refer to conditions in November, 1928, May, 1929, and November, 1929, respectively.[8] The movement of the market during the year preceding the date of reporting is reported as "stationary," "up," or "down" in the case of residential rents and "normal," "shortage," and "overbuilt" in the case of various types of buildings.

These surveys, however, have very serious limitations and must be used with caution. The data in many instances consist of opinion evidence concerning the condition of the local real estate market

[8] Twelfth, Thirteenth and Fourteenth Semi-Annual Surveys of the Real Estate Market, published separately as a *Bulletin* from the National Association of Real Estate Boards.

and consequently are influenced in large measure by the "bullish" or "bearish" state of mind which may prevail at a given time.

Discounting these various limitations, however, the surveys indicate the absence of an abnormally large surplus in apartment units *alone*. The total number of cities reporting[9] at the close of the period studied and for a year thereafter showed very nearly the same building situation in the single-family and apartment-house markets and a somewhat firmer rental market for apartments than for the other two types of dwellings. The January and December, 1929 reports on the "Building Situation," particularly, do show a considerable overbuilding in the larger cities but the difference in the *relative number* of cities reporting overbuilding in apartment houses as against overbuilding in single- and two-family houses, does not seem to indicate an undue concentration of vacancies in apartment houses. These data, of course, do not deal with the amount and degree of overbuilding in the different cities.

Post Office Surveys. The various weaknesses in the surveys published by the National Association of Real Estate Boards, however, require that some effort be made to compare the opinions presented in these reports with data from vacancy counts. Only one possible source of such data was found, the post office surveys made in a few cities by mail carriers under the direction of the local postmasters. Letters were sent, therefore, to the postmaster in each of the 255 cities included in this study. Replies were secured from 181 cities of which 122 reported no surveys or no records kept of such data; 20 gave some vacancy data entirely unsatisfactory in nature, i. e., opinions as to vacancies or merely a number of vacancies without classification by types of dwelling or any percentage measure, and 39 gave information expressed in vacancy percentages or at least classified by two or more types of dwellings during the period from 1926 to 1930. This list was supplemented by reports for Los Angeles in 1928 and 1929 made by the Eberle Economic Service.[10]

The 71 reports from these 40 cities represent some advance on the collections of opinion published by the National Association of Real Estate Boards. They are all counts of vacancies made either by the mail carriers or by someone hired by the local real estate board or chamber of commerce, mostly the former. Their value is lessened, however, by the lack of standard units; many had no classification for two-family dwellings; others had six or seven types of dwellings; a common term was "flats" which included all dwellings except single-family houses in some cases and in others applied to multi-family dwellings as used in this study. In the many cases where only two classes were reported—dwellings or residences and flats —these terms were taken to mean single-family and multi-family houses.

Twenty-four cities returning 36 reports gave percentages of vacancies distributed as shown in Table II. The rough indication is quite clearly that apartment-house vacancy was rather high in comparison with the single-family figure even if a difference of 5 to 7 points is taken to represent the expected normal difference caused by the differences in the markets and the greater mobility of apartment dwellers.

The remaining 35 reports from 16

[9] The January 1, 1929 report covered 341 cities; June 30, 1929, 379 cities; December 31, 1929, a total of 411.

[10] *Eberle Economic Service*, Vol. VI, Weekly Letter No. 15, April 15, 1929.

cities gave the number of vacancies by classes of dwellings but no percentages nor data from which percentages could be computed. In order, therefore, to make a rough comparison by type of dwellings the total number of vacancies for each type was expressed as a percentage of the total vacancies reported. This device showed that of 47,055 vacant quarters, 54.13% were in single-family dwellings, 15.18% in two-family houses, and 30.69% were in multi-family units. The cards for these same 16 cities showed that of the total number of families provided for in residential construction from 1921 to 1928, 77.63% were in single-family dwellings, 8.42% in two-family and 13.95% in multi-family houses. (The corresponding figures for the group of 255 cities were: single-family, 44.15%; two-family, 17.23%; and multi-family, 38.62%.) In other words, vacancies in apartment houses were a larger proportion of total residential vacancies in these 16 cities according to the reports from 1926 to 1930, than the newly built apartment houses were of the 1921-1928 residential construction. This crude method substantiates the conclusion indicated by reports giving vacancy percentages by classes of dwellings.

TABLE II. DISTRIBUTION OF VACANCY PERCENTAGES IN CITIES REPORTED IN POST OFFICE SURVEYS BY TYPES OF DWELLINGS, 1926–1930.

Vacancy Percentages	Number of Cities Reporting		
	Single-Family Dwellings	Two-Family Dwellings	Multi-Family Dwellings
Under 5%	25	5	3
5% to 9.9%	10	6	7
10% to 14.9%	1	4	11
15% and over	0	2	9

These rough tests of a possible overbuilding of apartment units show a somewhat higher vacancy in the larger units than in the single-family houses. While suggesting a condition somewhat closer to overbuilding than did the surveys of the National Association of Real Estate Boards, no large surplus of apartments is shown which would invalidate the building permit data as an index of change in housing facilities in this post-war period. With the qualifications discussed in this section clearly in mind, one is justified in stating that the building permit data are an excellent fund of raw material on the subject of post-war housing in cities of the United States.

Chief Methods of this Study

In the classifications of these data which follow in the discussion, summary or derivative tables which make possible the direct comparison of several classifications will generally be used and the complete tables, similar to Table I, will be given only in case a summary table does not reveal the significant facts. Most of these summary tables will present the 1921 and 1928 figures of families provided for in multi-family units as percentages of total families provided for in their respective years and the differences between these two multi-family percentages. This gives, with the necessary additional comments and qualifications, a fairly satisfactory measure of the extent of the multi-family or apartment house *movement* for the period in the various classes of cities. Care is necessary in reading and interpreting these tables, however. For example, if Table I were to be summarized for comparison with some section of the entire group, the summary table would show the 1921 multi-family percentage of 24.42 and the corresponding figure for 1928 of 53.74%. The difference between these two percentages, which is the measure commonly used for the strength of the multi-family movement, is 29.32.

This figure shows and measures the gain or loss which multi-family units have undergone during the period in

comparison with the other types of residential buildings. It is not correct to say nor to interpret it as a gain of 29.32% in multi-family house buildings; (this gain is nearly 400% measured in families provided for); it shows a gain between 1921 and 1928 for multi-family house construction, as indicated by building permits issued, of 29.32% in the yearly totals of families provided for. This explanation and warning seem called for at this juncture because of the frequent use of this device throughout the study and the ease with which it can be stated and interpreted incorrectly.

The other device which should be mentioned here is used to determine correlation or association of the multi-family house movement with other economic factors. The cities are arrayed according to the economic factor in question and are then divided into four groups of equal size (or as nearly equal as possible) which are referred to as "quartile groups." "Quartile group 1" always includes those cities which according to the hypothesis under examination are expected to have the smallest apartment-house increase from 1921 to 1928; "quartile group 4" is made up of the cities whose apartment-house increase is expected to be the greatest. With the cities so divided the record of each group in apartment building is found and on the basis of the comparison of these records the adequacy or unsatisfactoriness of the hypothesis is determined.

This method is merely an extension of the more common division of cities "above and below the median" according to one factor as a means of discovering correlation between it and the phenomenon being studied. (The two methods are quite often combined in this study.) The quartile group method, however, gives rather more detail for comparison. Groups 1 and 4 are particularly useful because they contain the extreme instances in which the correlation or lack of association are often most clearly reflected. Furthermore, this method makes possible occasional qualifications, limitations, and in some cases, reshaping of hypotheses. The association suggested by the hypothesis may, for example, be clearly evident in the upper three quartile groups but the record of group 1 may be "out of line." This fact may lead to supplementary hypotheses concerning the cities in group 1 which may add considerably to an understanding of the movement.

Summary of Previous Articles

The four articles which have appeared in the *Journal* and which have been referred to above[11] have covered a considerable portion of the analysis attempted in this part of the study. Not all the details nor all the methods followed in this portion of the work have been described in these articles but the framework of the methods used and the major conclusions drawn have been presented. Thus, to avoid repetition and at the same time to supply a background for the balance of the discussion, a bare summary of the conclusions reached in these previous articles is presented. It should be borne in mind also that the complete study contains additional material which supports the conclusions stated here.

1. The most commonly advanced explanations of the movement were found to be misleading. The increase in the building of multi-family houses was not confined to one or a few sections of the country, nor to cities which had relatively large amounts of apartment-house living in 1920. Apartment building was not primarily an at-

[11] See footnote 4, above.

tempt to catch up with the general post-war housing shortage. It was not closely correlated with the estimated rapidity of city growth; in fact, some basis was given for belief in an inverse correlation with rate of growth. Within the population limits of the group (roughly over 25,000) no clear relationship could be established between the apartment-house movement and the population size of the cities.

2. The increase in the building of apartment houses was much larger in metropolitan and suburban cities than in independent municipalities. The amount of increase, however, in the metropolitan cities and their suburbs was very nearly the same. The multi-family house percentage of the independent cities doubled during the period.

3. No clear difference in the strength of the apartment-house movement existed between cities whose populations were predominantly industrial and those which were employed in the main in commercial occupations. In cities from 25,000 to 50,000 and above 500,000 the apartment-house increase was larger in "commercial" cities; in cities from 100,000 to 500,000 the "industrial" cities showed larger increases.

4. Cities with zoning ordinances had much stronger apartment-house increases than unzoned cities. Recent building code revision was connected with fairly large apartment increases although cities following the recommendations on "Small Dwellings" made by the Building Code Committee of the Department of Commerce had very moderate increases.

5. A strong movement toward multi-family houses was found in cities with scanty transit facilities and in those with heavy tax burdens on real estate. The cities with the very lowest tax rates, however, also had large increases in apartments.

Major Costs in Residential Building and Their Relation to the Multi-Family House Movement

Position of this Section in the Study. In the preliminary outline of this study one of the most promising sections was the analysis of the relationship of major construction costs to the multi-family house trend. Several facts accounted for this prospect.

In the first place, the data of the Bureau of Labor Statistics have shown, in general, a lower construction cost per family and a considerably smaller increase in construction cost per family in multi-family units than in two-family and single-family homes.[12] This fact with

[12] AVERAGE COST OF DWELLINGS PER FAMILY IN 257 IDENTICAL CITIES, 1921 to 1928*

Year	One-Family Dwellings	Two-Family Dwellings‡	Multi-Family Dwellings§	All Classes of Dwellings
	Average Cost of Dwellings Per Family† in—			
1921	$3,972	$3,762	$4,019	$3,947
1922	4,134	3,801	3,880	4,005
1923	4,203	4,159	4,001	4,127
1924	4,317	4,336	4,418	4,352
1925	4,618	4,421	4,289	4,464
1926	4,725	4,480	4,095	4,422
1927	4,830	4,368	4,170	4,449
1928	4,937	4,064	4,129	4,407
	Index Numbers of Cost of Dwellings Per Family in—			
1921	100.0	100.0	100.0	100.0
1922	104.1	101.0	96.5	101.5
1923	105.8	110.6	99.6	104.6
1924	108.7	115.3	109.9	110.3
1925	116.3	117.5	106.7	113.1
1926	119.0	119.1	101.9	112.0
1927	121.6	116.1	103.8	112.7
1928	124.3	108.0	102.7	111.7

*Bureau of Labor Statistics, *Bulletin* No. 500, p. 21.
†Buildings only.
‡Includes one-family and two-family dwellings with stores.
§Includes multi-family dwellings with stores.

The figures of cost given are computed from the estimated cost of construction submitted by the builder in applying for a building permit. Two points should be noted: (1) They do not include land costs; (2) they

(Footnote 12 continued on page 301)

the absence of building for the lower income classes suggests that the apartment increase may be the result of economy measures practiced by a growing number of families, possibly encouraged by the competition of motor cars, radios, and other semi-luxuries for the consumers' preference. Analysis of the major costs and some measurement of their association with the apartment-house increase appeared to be a necessary step in the analysis of the trend in multi-family housing.

Secondly, a comparison of the chief types of building costs with the apartment increase would be an analysis of a direct influence on the types of houses built, whereas many of the other factors analyzed could operate only indirectly and, more important, could operate chiefly through their effect on one or more of these types of building costs. For example, building codes influence residential building by controlling in part the building material costs; transit facilities operate largely through their effect on land values. Therefore, indexes of material costs, labor costs, and of residential land values of different grades for a number of cities would make possible a desirable revaluation and integration of much of the previous work in this study.

In the third place, data on building costs make possible a partial test of the confusing claims which attribute the economic difficulties of housing to one particular type of cost or other.[13] The blame for the inability of the building industries to provide substantial single-family houses within the reach of the majority of the income earners has been laid in turn on land costs, on wage rates in the building trades, on material prices, or on the costs of financing. This study would not, of course, try to investigate thoroughly the influence of high material prices or financing costs on all phases of housing but it did seem possible to test the various claims in so far as they apply to the decline of the single-family house from 1921 to 1928.

Finally, if no high degree of association could be established between the

(*Footnote 12 continued from page 300*)

are costs to the builder, and not to the home buyer. The divergence between the latter two costs is, of course, the builder's profit which will vary with market conditions. Furthermore, the overwhelming majority of all estimates submitted are undoubtedly low. Tax assessors have access to such records, and with the heavy tax burden borne in nearly all cities by land and its improvements, very few builders would wish to suggest any higher value than the expected minimum for the type of structure planned. These figures are of use, therefore, only in making comparisons between years and types of buildings on the assumption that the percentage of "mark-down" in the estimates remains approximately uniform.

Another disturbing fact in the interpretation of the data in the table is that they include all types of buildings erected, the cheap and inexpensive as well as the costly and the elaborate. Thus differences in costs per family might be attributable to the erection of more expensive dwellings for a different type of occupancy rather than an economy in building for any one class of occupant. This fact would apply more directly, however, to changes in per-family costs from year to year than to differences between types of dwellings.

With allowance for all limitations of these data, the general lowness of the cost per family figures for multi-family dwellings may be taken as some evidence of a realized economy in housing construction. This conclusion is affirmed by entirely different figures and methods in two excellent articles by Henry Wright, "The Modern Apartment House," 65 *Architectural Record* 213-245 (March, 1929); and "The Place of the Apartment House in the Modern Community," 67 *Architectural Record* 207-238 (March, 1930).

[13] Examples of these claims may be found in:

(a) Whittaker *The Joke About Housing* (Boston: Marshall Jones, 1920), in which land costs are said to be the hindrance to better housing, (b) Herman, *Why "Public Credits" Is the Logical and Practical Solution of the Housing Problem of the Lower Income Group* (Michigan Housing Association, 1929)—finance costs; (c) 1928 issues of *American Contractor*—labor costs and note particularly the indexes of labor, and material costs and their base years; (d) Grosvenor Atterbury, *The Economic Production of Workingmen's Homes* (Russell Sage Foundation, 1930), in which material costs and antiquated building methods are blamed.

apartment-house increase and some of the satisfactory indexes of the major costs of housing, the suggestion might be advanced with some confidence that the apartment increase was not primarily a money-saving movement but might be attributed in large measure to a change in the attitude of city dwellers toward the desirability or at least the acceptableness of apartment-house living. A more complete analysis of the multi-family house movement in this case would have to be sought in the attitudes and opinions held at present by the persons who make up the demand for houses.

Because of the prominent position this section of the study occupied in the general outline of procedure, the weakness of the results is particularly disappointing. Five major costs of providing housing were set out; building material, labor, land, finance costs, and management fees and profits. For not one of the five costs were the data available for a satisfactory index covering a large proportion of the cities. Enough data were collected, however, to work out a rough index covering a few cities for each of the first three types of costs. Because of the significance of this analysis in the study the results of groupings based on these indexes are presented.

Building Material Prices. Neither the weighted index of building material costs nor that of wage rates in the building trades which could be made from the data available showed any definite connection, either direct or inverse between these items and the increase in the building of apartment houses. For this reason no lengthy description of methods and results will be included here. Two weighted indexes of the six chief building materials, (lumber, brick, cement, sand, linseed oil, and shingles) were constructed from the prices of materials delivered, compiled by the Division of Building and Housing and the Bureau of the Census. The two schemes of weighting, one for frame and one for brick house construction, were devised by Mr. James S. Taylor of the Division of Building and Housing according to the "relative importance of each commodity in the construction of a six-room house."[14] Incompleteness of the recorded data prevented the inclusion of other materials. The six indexes used were those for brick and frame house construction for 1923 and 1928 and for the changes in the cost indexes between these dates for both types of buildings.

The negative character of the results from this testing of building material prices and the multi-family house increases must not be taken to imply that all building material costs are of no consequence in this movement toward apartment houses. The classifications based on building code revisions revealed evidence clearly to the contrary.[15] This grouping of cities by weighted indexes of material prices has at least three serious limitations which must not be overlooked.

(1) The grouping is by *differences* among the index numbers of the different cities, i. e., the cities with high indexes were grouped together and their record of apartment-house building was compared with that of the cities with lower indexes. No account was taken of the level of building material prices relative to the prices for other commodities which, presumably, might be in indirect competition nor of their relation to income levels.

[14] Letter from James S. Taylor, dated December 11, 1928.

[15] See 6 *Journal of Land & Public Utility Economics* 405 (November, 1930).

(2) The number of cities for which data were available for the building material indexes was very small (13). It should not be forgotten, however, that the city is the unit for reporting but not the unit for measuring the apartment-house increases which is the "families provided for." The smallest number of families provided for in any year in any group of cities was 992 and in most groups it was several thousand. The possible association of building material prices and apartment-house building is thus more adequately tested than the number of cities included would lead one at first to believe but the test is not nearly as inclusive as that made of most other hypotheses.

(3) Finally, and probably most significantly, the price indexes used are only of building materials which go into the "shell" of the house; no account is taken of the prices of fixtures, equipment, or accessories. Many persons argue with conviction that insistence upon such equipment and its cost are responsible for the decline of the single-family house. However true or false this claim may be, the indexes compiled in this study do not take account of this increasingly important type of building material[16] and any inferences made from the negative character of the results achieved must point out this limitation clearly.

Labor Cost. The weighted indexes of wage rates in the building trades were made from union wage scales collected and published by the Bureau of Labor Statistics, weighted according the relative "costs of labor on the job" on residential building as shown by another study made by the Bureau.[17] Here again the statistics were incomplete and only eight trades were included in the index. Fortunately they were the most important types of labor in house building—namely, carpenters, bricklayers, plasterers, concrete workers, plumbers, painters, electricians, and tile workers. Indexes were computed for three years, 1921 covering 45 cities, 1924 for 49 cities, and 1928 with 54 cities. In addition, another classification was made according to the changes from 1921 to 1928 in the indexes of labor rates in the 43 cities with data by years. The most serious limitation on this index was that the material from which it was constructed consisted of union wage rates which take no account of (1) the amount or frequency of the deviation of wages paid from the wage scale in different cities at different times; (2) the efficiency of labor, and management; (3) the use of labor-saving machinery either in the preparation of materials or on the job, nor (4) pay for short time or overtime.

Classifications of the cities by these indexes of building material prices and union wage rates in the building trades added very little to an understanding of the economic factors associated with the increase in the building of multi-family houses. Possibly the classification suggested a very slight connection of the apartment increase with high wage rates but this was not by any means clear. This recapitulation of this section of the study is made more to show the effort which has been made to cover as far as possible every promising hypothesis rather than for any light which it gives on the apartment-house movement.

[16] Mr. Ernest P. Goodrich of the Research Institute for Economic Housing in the *New York Times*, January 19, 1930 stated: "Today new conveniences and equipment constitute 48 per cent of the total cost of the house; heat and lighting, 8½ per cent; floor finishes, 12 per cent; interior finish and decoration, 12 per cent; plumbing and utility construction, 15½ per cent." This, of course, is a very general statement, and undoubtedly the percentages given would vary considerably with locations and types of houses.

[17] "Relative Cost of Material and Labor in Building Construction," 28 *Monthly Labor Review* 1-8 (January, 1929).

Land Values and Housing Construction. The third major type of housing cost which might be roughly measured and which might be a factor of consequence in determining the strength of the multi-family house movement in different cities is the land cost. The cost of residential land is very frequently presented as the deciding factor in determining the prevailing type of house in the different residential areas of cities. Probably many persons exaggerate the proportion of land value to the total value of the great majority of residential properties, but, on the other hand, land value cannot be dismissed as a minor influence.[18] The proportion of land to total costs of housing, however, is not the only consideration in this problem. If two or more uses, say apartments and single-family houses, are allowed in one district the success of a very few apartments may raise the asking prices for land in the entire district to a level which effectually shuts out small house construction. Only persons of the upper income levels can afford for single-family housing land the value of which is based on even small-apartment-house use and such persons, quite naturally, will usually not consider suitable for their homes an area in which apartments are being built or appear imminent. Land values, then, often operate to bar permanent uses lower in the scale of rent-paying ability from rather large districts and to force such uses to compete among themselves for sites in other districts. Such competition may result in raising land values in this second type of district although many vacant or poorly improved lots remain in the districts first mentioned.

Another peculiarity of residential land values and their effect on housing is the fact that they are, in part, a bar against the entry of certain groups and occupational classes who are held to be undesirable neighbors by the class first occupying the districts. Once this bar is broken the original residents will almost always consider ways and means of moving from the district.[19] Most people would welcome a measure which reduced labor or finance costs in residential construction; nearly as many would favor methods which cut down material costs. But reduced land values in any district often have a rather different reception. They are apt to result in the flight of the prospective builders and actual residents, who should benefit by the lower values, to other districts whose land values (aided possibly by deed restrictions), give the sense of safety from "undesirable" neighbors which is so sought for. Of course, this action opens up the district in question to those lower in the income scale and, if this second class of residents is a larger and more poorly housed group than the former, the net result may be desirable. On the other hand, such migrations from residential districts are often a first step in the evolution of a "blighted district." But the noteworthy fact for the purpose of this study is that as long as this element of protection from the intrusion of

[18] Gries and Taylor, *How to Own Your Home*, Division of Building and Housing, Department of Commerce, p. 12. "If all improvements have been made the cost of the lot frequently runs up to 20 per cent, but it should rarely exceed 25 per cent."

Holden (in collaboration with Wright and Stein), *Primer of Housing*, (Workers Educational Press), p. 26—"Land and Its Improvements" are said to be about 21½% of total cost of house construction. These figures are only rough approximations to the conditions existing in moderate priced single-family house construction.

[19] This tendency is particularly characteristic of American cities. For comparison in this respect with European cities see Ernst Freund in *Papers and Discussions of National Conference on City Planning*, 1926, pp. 78-82. Note that Professor Freund thinks that the sensitiveness of most residential areas in American cities to the entrance of any persons not strictly in conformity with their "character" is partially explained by the predominance of single-family houses.

"undesirable" classes and groups remains important in residential land values the cost of land to the individual house builder will not be markedly reduced *unless* an abundance of land exists for every type of residence district. Land values are then a *peculiarly persistent force* on the cost side of housing and a force which should not be belittled.

1. Data on Residential Land Values. The collection of data for a comparison of residential land values in different cities is a proceeding filled with pitfalls. The unorganized condition of the market for urban real estate is well known. The lack of accurate records of sales, the importance of "higgling and bargaining," the difficulty of separating land and building values in improved residential properties, all increase the hazards of saying that most land values in such and such a district range between any two figures which are sufficiently close together to be of use in comparing the district with others. Yet despite these obstacles to a clear understanding of land values and their trends, real estate dealers and city officials, such as the tax-assessors and city plan secretaries, do in nearly all cases arrive at some idea of the levels at which most of the lots in a fairly well defined district would sell. These opinions may be too generalized for some purposes but for this study all that is needed is a basis for dividing the cities into four groups according to value levels for different grades of residential land. In addition, it should be remembered that these generalized opinions of residential land value levels are all that most prospective house builders and buyers have for guides when they are considering the advisability of buying, building, or renting their residences.

Closely allied to the hazards in determining residential land values which go with the unorganized real estate market are those which follow from the nonstandardized character of the units dealt in. Real estate dealers and writers on the real estate business seem to enjoy stressing this second fact.[20] No one, of course, will deny the general statement. But the stress laid on the obvious facts has led to an uncritical acceptance of many loose deductions from it. The separation of the central fact from these inaccurate deductions is necessary in this study. In the first place, the fact that no two lots are identical does not imply necessarily that they may not be of the same or very nearly equal value. Particularly in residential districts is the compensatory nature of the desirable qualities of lots noticeable. The farther a lot is from the street car line, the transit station and the neighborhood business district the closer it usually is to parks, schools, and the open country and the more free from noise and heavy traffic. The automobile has probably contributed to this reduction of the significance of many distinctions among lots, particularly in medium-grade residential areas. It has widened the area easily accessible to business centers and transit stations and the volume of motor traffic is rapidly destroying the preference formerly held for lots abutting on a few large boulevards and "drives." Differences of value continue to exist, of course, but the extremes usually apply to a relatively small percentage of lots within the same use district.

Another fact which must be recognized here is that differences which affect values appreciably are much more common and more sharp in business and in expensive residential lots than in the medium-grade and inexpensive residen-

[20] See, for example, Snyder and Roby, *Fundamentals in Real Estate* (New York: Harper & Brothers, 1927), pp. 35-7.

tial areas which are the controlling areas as far as trends in the amount of housing construction are concerned. A difference of 200 feet or so may be the difference between a business lot facing a valuable stream of traffic and suitable for a high income-producing store and one which has only a fraction of the amount of traffic and usable only for second rate stores, repair shops, etc. The difference in land values may be in hundreds of dollars per front foot. In expensive residential lots careful developers try to emphasize each point of difference because they know that relatively small details and distinctions may be the basis of considerable differences in value. The irregular lot lines of such developments are one evidence of the attention paid to differences in detail. In medium and lower grade residential lots, however, desirability is more a composite result of many conditions. Moreover, the incomes of the inhabitants of such dwellings do not permit large premiums to be paid for individuality or uniqueness. This fact is evidenced by the monotony of layout and appearance in most of such residential districts. On more careful examination, therefore, the non-standardized character of units of real estate is seen to be not quite as insurmountable an obstacle to a comparison of residential land values as might at first be anticipated.

A third obstacle in securing reliable data on levels of residential land values in different cities is the general optimism or "bullishness" of most real estate dealers in matters of land values. This characteristic is too well known to need much elaboration. It perhaps is largely traceable to the fact that most real estate dealers are brokers whose commissions on sales are an important part of their income and who have learned that emphasis on land value appreciation is a most effective note to strike both in completing individual transactions and in maintaining the urban real estate's reputation as a medium of speculation. In so far as real estate dealers are themselves investors and speculators in urban land the absence of short-selling in the real estate market is probably a contributing influence. Professional operators in such a market can only be "bulls." Furthermore, nearly all American cities of 25,000 and over have a history of quite constant and in some cases spectacularly rapid increases in population and, in most residential areas, rises in land values. Real estate dealers have come to look forward without much question to appreciation of land prices; correctly or incorrectly such an attitude is a part of the equipment of the business.

For the purpose of this study absolute accuracy of reported land values is not as necessary as reports which are in about the same ratio to actual value in all cities. In other words, the inflation which is usually found in land value figures given out by real estate men is not a fatal error if the amount of inflation is about the same relatively from city to city. Without at all conclusive evidence this assumption was made and, further to justify its use, cities known to have experienced recent real estate "booms" of abnormal intensity were excluded from the group used in this section of the study.

2. Relationship of Residential Land Values and the Increase in Multi-Family Housing. Although an examination of the peculiarities of reported land value figures suggested some test of the possible association of high residential land values and a strong apartment-house movement, the scarcity of data covering more than a very few cities appeared for some time to make such a test impossible. Finally, the data assembled

by N. J. Upham, a former president of the National Association of Real Estate Boards, on land values by types of districts in 41 cities were used as the best available.[21] Mr. Upham's compilation included four classes of residential land which he designated as "highest grade residence," "high grade subdivision," "good grade subdivision," and "good working district." For reasons discussed above as to the representativeness of value figures in different kinds of residence districts, as well as the fact that the land cost element in housing would be much more of an influence to their inhabitants, the figures for the last two classes, i. e., "good grade subdivision" ("with limited improvements") and "good working district," were the only ones used. The data are as of January 1, 1928.

The cities[22] included in Upham's tabulation were reduced to 32 by elimination which took out some cities for which complete building permit figures were not available, two Canadian cities, and Miami, Florida which was not included because of the unsettled condition of its real estate market.

One of the 32 cities, Detroit, reported values in the "good working district" class only; and another, Portland, had a figure for "good grade subdivision" only. Because of the smallness of the sample each of these cities with incomplete reports was included in the groupings for which it supplied reported data. In about one-third of the figures reported a small range of values, usually $5 to $10 per front foot was listed. In all such cases, the middle point of the range given was taken as the representative figure.

Perhaps the least satisfactory characteristic of this group of cities taken from Upham's study is that they do not sample the smaller cities included in the 255 cities with complete building permit data. Although Chicago is the only one of the "big three" included, the smallest city of the 32 with land value reports was Galveston with a 1920 population of 44,225 and a 1927 estimate of 49,900. This fact must not be forgotten in applying the results of this section of the analysis to the general housing construction movement.

Table III shows the results of the

TABLE III. INCREASE IN PERCENTAGE OF FAMILIES PROVIDED FOR BY NEW MULTI-FAMILY DWELLINGS IN CITIES CLASSIFIED BY LAND VALUES IN MEDIUM-GRADE SUBDIVISIONS AND IN WORKERS' RESIDENTIAL AREAS, 1921–1928

Classes of Cities	Number of Cities	Percentage of Families Provided For in New Multi-Family Dwellings		Increase in Multi-Family Percentage
		1921	1928	1921–1928
By Values in Medium Grade Subdivisions				
Cities below the Median	15	15.64%	29.77%	14.13%
Quartile Group 1 ($12.50 to $19.99 per fr. ft.)	8	15.47	38.17	22.70
Quartile group 2 ($20.00 to $29.99 per fr. ft.)	7	15.82	16.07	.25
Cities above the Median	16	24.92	57.36	32.44
(Chicago excluded)	(15)	(18.75)	(41.35)	(22.60)
Quartile Group 3 ($30.00 to $39.99 per fr. ft.)	8	25.77	25.82	.05
Quartile Group 4 ($40.00 to $70.00 per fr. ft.)	8	24.64	66.86	42.22
(Chicago excluded)	(7)	(15.26)	(51.29)	(36.03)
By Values in Workers' Residential Areas				
Cities below the Median	15	16.01	29.89	13.88
Quartile Group 1 ($8.00 to $14.99 per fr. ft.)	8	13.56	32.24	18.68
Quartile Group 2 ($15.00 to $19.99 per fr. ft.)	7	17.58	26.68	9.10
Cities above the Median	16	25.99	52.77	26.78
(Chicago excluded)	(15)	(21.29)	(38.33)	(17.04)
Quartile Group 3 ($20.00 to $24.99 per fr. ft.)	8	15.56	26.32	10.76
Quartile Group 4 ($25.00 to $65.00 per fr. ft.)	8	29.30	58.51	29.21
(Chicago excluded)	(7)	(23.77)	(42.78)	(19.01)

[21] Reported in 29 *National Real Estate Journal*, August 6, 1928, pp. 27-30.

[22] The cities included are: Chicago, Detroit, Los Angeles, Baltimore, Pittsburgh, Minneapolis, Seattle, New Orleans, Indianapolis, Kansas City, Mo., Portland, Ore., Rochester, N. Y., Oakland, Louisville, St. Paul, Houston, Akron, Memphis, Omaha, Richmond, Oklahoma City, Tulsa, San Diego, Calif., Jacksonville, Chattanooga, Long Beach, Calif., Albany, N. Y., Knoxville, Spokane, Duluth, Savannah, Galveston.

quartile groupings made on the basis of land values in good grade subdivisions and in better class working districts to test the hypothesis that high land values might be associated with a strong multi-family house movement in residential construction. Because of the smallness of the quartile groups the record of all cities above and below the median both for medium-grade subdivision and working class district values was worked out. These data, small though the sample undoubtedly is, give considerable support to the hypothesis that high land values and strong apartment trends are found together. This is particularly true of the groupings of cities above and below the median in medium grade subdivision values. Dropping Chicago reduces the figure for multi-family increases in cities above the median but in this classification it remains well above the corresponding figure for cities below the median. The same result is noticeable in the withdrawal of Chicago from the fourth quartile group. The grouping based on values in the working class residential districts shows similar results, although the difference between groups is much less pronounced and the removal of Chicago nearly wipes out the difference which supports the hypothesis.

Neglecting the groupings of cities above and below the median in both classes of land values and focusing attention on the results of the quartile groupings alone reveals an interesting similarity. In both classes the first quartile group, i. e., the cities with the lowest land values, shows a fairly strong multi-family trend, quartile groups 2 and 3 show small multi-family increases (almost negligible in the case of medium grade values), the cities in quartile group 4, with the highest value, record a very strong apartment trend. As in other respects, the cities grouped according to subdivision values show the more striking differences in the records of quartile groups but the record of the classifications based on values in workers' districts is very similar.

The small size of the quartile groups forbids any interpretation of the facts which could confidently be expected to be substantiated entirely by further study and research. The suggestion may be made, however, that these results of the quartile groupings lend support to the statements made earlier to the effect that too low land values in medium class districts do not under present conditions encourage single-family house building but may cause the prospective builder to postpone his project because of the fear of the invasion of the district by "undesirables."[23] If this condition is general, it may result in sharply rising values in the next higher grade of vacant land values and an indefinite postponement of the small house; in other words, an increasing demand for apartments.

Another interpretation which may be more fundamental than the one just outlined should be mentioned although the data for its further testing are not available. The oversubdivision of land in many cities has lowered values even in good grade developments and in the less expensive, built-up, residential areas, while the subdivision lot without improvements in many cities has been practically worthless for the last two or three years. The cities in which this excess of subdivision has been relatively the largest might be expected to be those cities which, as a class, are in the quartile group of lowest medium grade subdivision and working district values. Moreover, oversubdivision means that hundreds and thousands of families have sunk all or a considerable part of their savings in poor quality lots most of which,

[23] Page 304, above.

under the standards now enforced by most cities, are not improved (i. e., with sewer, water, or other public utility connections) and are very nearly worthless. The holders of these lots cannot build because the erection of a sanitary house is impossible, and no reliable agency will lend on vacant unimproved land. Consequently most of them are thoroughly disillusioned, temporarily at least, as to real estate operations. Certainly it is reasonable to suppose that the general condition of the subdivision market since 1926 may have strengthened the apartment-house movement. Unfortunately the reliable data on the extent of oversubdivision do not cover enough cities to make possible any test of this apparently reasonable connection.[24]

The data on land values in medium-grade subdivisions and good working-class districts in medium and large sized cities, although allowing only a small sample to be tested, give considerable support to the hypothesis that high land values are associated with a strong multi-family house movement. Nothing in this discussion, however, states that one of the factors is always the cause and the other is always the result. Each one probably influences the other. These findings substantiate the conclusions drawn from the classification based on the relative size of transit systems in various cities. On the other hand, the transit classification data[25] suggest that high residential land values are to some extent the factor precedent to the multi-family house movement.

The Economic Well-Being of Cities and the Increase in Apartment-House Building. Another hypothesis comes to mind in almost every social and economic study covering a number of cities. The "average" of wealth or income in cities might have some effect on the multi-family dwelling increase. Inasmuch as the per-family cost of providing housing facilities is less in multi-family than in single-family houses[26] one might expect to find the more well-to-do communities with smaller apartment-house increases from 1921 to 1928. Unfortunately, the usual statement as to the wealth of communities is ambiguous and rather hard to clarify. Probably the modal family expenditure over a period of years is meant in most cases. Counting out the extraordinarily rich and the destitute where does the level of most incomes stand? At the minimum of existence of the factory wage earner and the department store clerk? At the level enjoyed by the successful professional, commercial, and property owning class? Or somewhere between? All cities of any size have examples in the range from rich to poor but in different proportions. The differentiation is sharper among the cities of a metropolitan district and without any precise statement or index of wealth or income one would easily classify, for example, Evanston and Cicero in Illinois, New Rochelle, N. Y. and Kearney, N. J., Brookline and Everett, Mass.

Measures of Economic Well-Being of Cities. A satisfactory index on which to base such a classification is more elusive even than a sharply defined formulation of the hypothesis. Savings deposits, registered passenger cars, number of telephones and electric consumers, major occupations of the gainfully employed, circulation of newspapers and magazines are all indicative to some degree but have apparent weaknesses. Another

[24] See, however, the application of Fisher's data (Table I, page 256) made in an article, by Coleman Woodbury, "Some Suggested Changes in the Control of Urban Development," 5 *Journal of Land & Public Utility Economics* 256 (August, 1929).

[25] 7 *Journal of Land & Public Utility Economics* 189-199 (February, 1931).

[26] See footnote 12, above.

handicap in this study is that many of the data which have been assembled by governmental agencies and by advertising companies as measures of purchasing power are presented by counties instead of by municipal units.[27] Three different indexes were chosen for use in this study; (1) the percentage of persons employed in domestic and personal service to the total gainfully employed in 1920; (2) the percentage of persons provided for in all types of dwellings from 1921-1928 to the estimated 1920-1927 population increase of the cities; (3) the number of persons of the cities' population to each individual federal income tax return filed in 1925. These indexes have limitations and shortcomings which will be taken up when the results of the classifications based on them are presented. Their chief advantage over many sets of data compiled for "purchasing power" measures is that they are determined less by the income classes for which few houses are built at present, and they do not attempt to measure the smaller variations in purchasing power or income which might be of significance in the market for smaller and less expensive commodities.

The Hypothesis Tested. Table IV summarizes the results of classifying 205 cities according to the percentages of persons in domestic and personal service to the total gainfully employed in 1920.[28] The mean average percentage for each size group was found and the cities of the size groups were classified as above or below this figure.[29] Presumably a large percentage of persons in domestic and personal service indicates a wealthy city, or perhaps more accurately, a city with a large number of persons of sufficiently high income to be in the market for single-family houses. Of course, the persons so employed constituting about 10% of the gainfully employed are not necessarily well off economically.

Not all of the 19 different occupations listed under the head of domestic and personal service by the census [30] indicate a high income standard in a city but the most numerous occupations which largely determine the size of the total in most cities are roughly indicative of a high or comfort standard of expenditure. They are the barbers, hairdressers and manicurists, housekeepers, janitors, launderers and laundry operatives, restaurant keepers, servants, and waiters.

The argument may be put forward that the persons in domestic service do not necessarily live in the cities in which they work and the use of those percentages as measures of the cities in which they do live leads to an erroneous classification. In some cases this may be true but it was assumed that this separa-

[27] For example, the *Market Data Handbook of the United States* (1929), Bureau of Foreign and Domestic Commerce in the Department of Commerce, and the Dartnell Index in *Dartnell Advertiser's Guide* (Chicago: The Dartnell Corporation, 1927). The Department of Commerce is supplementing the *Handbook* by sectional studies which will give the data for smaller units. The only one published to date is the *New England Market Data Handbook* (1929).

[28] Data from *Fourteenth Census of the United States*, Vol. II, pp. 128 to 335.

[29] Because the negroes are an unusual supply of cheap labor for these jobs, the southern cities—those in the South Atlantic, East South Central and West South Central sections—were excluded. Their inclusion would have destroyed the data as measures of city wealth because nearly every southern city, regardless of other characteristics, would have been above the average for its size group.

[30] The Census classification of domestic and personal service includes 19 different occupations; (1) barbers, hairdressers, and manicurists; (2) billiard room, dance hall, skating rink, etc., helpers; (3) boarding and lodging housekeepers; (4) bootblacks; (5) charwomen and cleaners; (6) elevator tenders; (7) hotel keepers and managers; (8) housekeepers and stewards; (9) janitors and sextons; (10) laborers (domestic and professional service); (11) launderers and laundresses (not in laundry); (12) laundry operatives; (13) laundry owners, officials and managers; (14) midwives and nurses (not trained); (15) porters (except in stores); (16) restaurant, cafe and lunchroom keepers; (17) servants; (18) waiters; and (19) other pursuits.

tion of living and working was probably less in the case of domestic and personal service than in other occupations. The relatively long hours of the work and the number of servants and housekeepers who live in the same or adjacent houses in which they work support this assumption. The minimum size of the cities in this study is another consideration here. While in small suburban villages of a quite uniform type of development many persons in domestic service may not live in the same municipality, this proportion would probably decline rapidly in the larger communities which usually have sufficient areas for the housing of people of such income classes.

Before turning to the comparison presented in Table IV, another possible connection of apartment-house growth and the number of persons in domestic and personal service should be noted. A common explanation of apartment living among classes of people who used to live in single-family houses and apparently are still financially able to buy and maintain such dwellings, is that with the present shortage of domestic help apartments are becoming more popular because of the reduction of household labor necessary in their smaller and more compact suites. If this motive is a considerable factor, cities with large proportions of domestic and personal servants should have only a moderate apartment-house increase. The connection would not be direct because wage rates for this type of work would be a determinant in the housewife's problem of choosing between a rented apartment and a single-family house and these rates are only very indirectly reflected in a percentage measure of domestic servants. This supplementary argument, however, anticipates the same connection as the one which considers the proportion of domestic servants as a measure of community wealth or standards of expenditure, namely, the higher the percentage of persons employed in domestic and personal service, the smaller the apartment-house increase.

The outstanding fact of Table IV is that the expected relation between the percentage of persons employed in domestic and personal service and the apartment-house increase is found in only one of the six population groups, in the cities of 250,000 to 500,000 population. In the 50,000-100,000 group the difference between the apartment-house increases of cities above and below the average in domestic service is not large but in all other classes the cities above the average have had a stronger multi-family movement than the supposedly

TABLE IV. INCREASE IN PERCENTAGE OF FAMILIES PROVIDED FOR IN NEW MULTI-FAMILY DWELLINGS IN CITIES IN SIX SECTIONS OF THE UNITED STATES CLASSIFIED BY PERCENTAGE OF PERSONS EMPLOYED IN DOMESTIC AND PERSONAL SERVICE IN 1920 FOR SIZE GROUPS OF CITIES.

Classes of Cities	Number of Cities	Percentage of Families Provided For in New Multi-Family Dwellings		Increase in Multi-Family Percentages
		1921	1928	1921–1928
Cities over 1,000,000 above average (11.06%)	1	44.22%	80.40%	36.18%
Cities over 1,000,000 below average	2	38.35	67.24	28.89
Cities 500,000–1,000,000 above average (10.65%)	5	22.23	57.30	35.07
Cities 500,000–1,000,000 below average	3	25.21	30.47	5.26
Cities 250,000–500,000 above average (10.03%)	7	15.33	38.97	23.64
Cities 250,000–500,000 below average	4	24.40	68.55	44.15
Cities 100,000–250,000 above average (8.77%)	17	15.09	44.51	29.42
Cities 100,000–250,000 below average	13	10.19	18.66	8.47
Cities 50,000–100,000 above average (8.36%)	23	22.50	34.95	12.45
Cities 50,000–100,000 below average	32	12.80	21.99	9.19
Cities 25,000–50,000 above average (8.86%)	34	12.95	37.10	24.15
Cities 25,000–50,000 below average	64	19.94	32.49	12.55

less well-to-do municipalities. The larger groups of cities from 25,000 to 50,000 and from 100,000 to 250,000 record figures quite as unmistakably opposed to the hypothesis as do the two classes of cities over 500,000 population.

The four cities below the average in the 250,000 to 500,000 size group are Jersey City and Newark, Rochester, N. Y., and Milwaukee. Three facts may be taken into account, aside from the small number of cities, in considering the sharp divergence of the results of this group from the others. First, Jersey City and Newark which together in 1921 built houses for 40.09% of the total families provided for in the four cities and, in 1928, 44.36%, are both in the New York metropolitan area and are undoubtedly strongly influenced by the central city. None of the seven cities above the average in personal and domestic service in this group fell directly under the influence of any larger center of population which might have stimulated its building of multi-family units.[31] In the second place, the larger part of the apartment increase of the cities below the average in this group came in the last two years of the period under study. From 24.40% in 1921 the apartment proportion increased steadily but slowly to 41.80% in 1926, then jumped to 60.02% in 1927 and advanced to 68.55% in 1928. This sudden increase may be taken to indicate a less sure apartment-house trend than the corresponding figures for the cities above the average which stood at 15.33% in 1921, at 31.53% in 1926, and increased rapidly but by no means spectacularly to 34.41% in 1927 and 38.97% in 1928. Finally, because of the record of two-family construction, the single-family house actually lost less ground in the cities below the average than in those above in this size group. The *decrease* in single-family percentages from 1921 to 1928 was 24.34 for cities above the average and 22.55 for those below. Despite the larger difference in multi-family increase in the two sections of this group the wealthier cities, as judged by the proportion of domestic servants, recorded a slightly greater decline in single-family house construction than did those cities with lower standards of expenditure. Thus, contrary to expectation, the results of the analysis up to this point suggest that well-to-do communities have changed more rapidly to apartment building than those with lower standards of expenditure—at least so far as the relation between number of persons employed in domestic and personal service to the total gainfully employed is an index of community wealth. The poorer cities have on the whole moved less in the direction of apartment living than have wealthier ones of the same size.

The results of further testing of the hypothesis—namely, that poorer communities would be expected to lead the apartment-house movement—by determining the ratios of persons provided for in all new residences to estimated population increase as the index of community of well-being and purchasing power are presented in Table V. The number of persons provided for in new residences from 1921 to 1928 was computed simply by finding the total number of families provided for during the period and multiplying by the average size of family in each city reported by the Census of 1920. The population increase figures used were the estimates of the Bureau of the Census which have already been discussed in a previous

[31] The seven cities above the average are: Cincinnati, Denver, Indianapolis, Kansas City (Missouri), Minneapolis, Portland (Oregon), and Seattle.

section of this study which dealt with rates of population increase.[32]

The argument for this ratio as an index of the purchasing power of a city's population is quite direct. When more persons are provided for than are added to the city's population, if gross overbuilding is not present, older inhabitants are moving into newer quarters and presumably, therefore, are in a position to pay the higher rentals and purchase prices which new construction usually demands. The ratios of almost all cities are high for this period because of the general shortage of houses at the beginning of the period which was largely wiped out. This shortage was not proportionately large in all cities but the use of this ratio as an index of purchasing power assumes that *differences* in the proportionate size of the shortage were not sufficiently large among most of the cities to affect radically the factor of total persons provided for in the ratio. This assumption may certainly be questioned and it would seriously invalidate the index, were this measure used alone. As a supplementary or secondary test, however, it may be included here.

TABLE V. INCREASE IN PERCENTAGE OF FAMILIES PROVIDED FOR IN NEW MULTI-FAMILY DWELLINGS IN CITIES CLASSIFIED BY PERCENTAGE RATIOS OF PERSONS PROVIDED FOR IN ALL NEW RESIDENTIAL CONSTRUCTION FROM 1921 TO 1928 TO THE ESTIMATED POPULATION INCREASE FROM 1920 TO 1927

Classes of Cities	Number of Cities	Percentage of Families Provided for In New Multi-Family Dwellings		Increase in Multi-Family Percentage
		1921	1928	1921–1928
Quartile Group 1 (percentage ratios from 1191% to 247%) (New York and Chicago excluded)	52	35.21%	70.68%	35.47%
	(50)	(18.61)	(49.30)	(30.69)
Quartile Group 2 (percentage ratios from 246% to 158%) (Philadelphia excluded)	52	21.42	36.61	15.19
	(51)	(22.11)	(38.57)	(16.46)
Quartile Group 3 (percentage ratios from 157% to 105%)	53	11.82	23.03	11.21
Quartile Group 4 (percentage ratios from 104% to 9%)	52	9.18	24.01	14.83

The quartile groups in Table V are arranged as in the other tables in order of the expected strength of the apartment-house movement according to the hypothesis under consideration which means here, of course, in inverse order of indicated community purchasing power. The figures of apartment-house increase are quite clearly opposed to the hypothesis; the first three groups show increases in multi-family houses directly opposed to the hypothesis and the last group which was expected to register the largest apartment-house increase shows the next to the smallest. Dropping the three largest cities from the classification does not alter this order. The results are quite clearly contrary to those suggested by the original hypothesis.

The percentage of persons employed in personal and domestic service measures roughly the size of the upper income classes in the economic structure of different cities but also indicates the size of a group which is far from well-to-do; the ratio of persons provided for to estimated population increase takes in all income classes but has the defect of the possible influence of abnormal housing shortages in 1921 which was just mentioned. The third measure is the the most nearly satisfactory single index for the present purpose. The number of persons per individual federal income tax return is a ratio of the total city population to that portion of the population which received during the year a gross income of $5,000, or a net income (gross income minus taxes, contributions, interest on personal indebtedness, and some other less common items) of $1,500 for single persons or $3,500 for married

[32] 6 *Journal of Land & Public Utility Economics* 230, n. 6 (August, 1930).

persons.[33] The ratio is not that of persons to the amount of the tax nor in fact to the payment of any tax but merely to the filing of a tax return. In this measure, the moderate incomes count equally with the abnormally high ones. In other words, this index gives more nearly equal weight to middle class incomes than the other measures used.

The weaknesses of this measure, however, are several. The distinction made between single and married persons adds a considerable number of unmarried income tax payers who have not sufficient income to be in the market for single-family houses nor, in most cases, the desire nor need for such living quarters. The size of the family determines in part the size of the tax and the possibility of the family buying a house but not the necessity of making a return. Thus, a family of three (husband, wife and one child) with a net income of $4,200 a year chiefly from wages or salary would have to file a tax return and pay a tax (unless reductions for "income tax paid at source on tax-free government bonds" plus "income and profits taxes paid a foreign country or possession of United States," equalled or exceeded the amount of the tax—certainly a rare case). The head of such a family would in all probability be able to purchase a modest house if he wished. Another family with the same net income, but made up of the parents and five or six dependent children, would have to file a return although no tax would be paid ($400 credit for each dependent child plus $3,500 for the husband and wife) but they would probably be in no position to buy a house and lot. Both tax returns, however, would affect the ratio here considered as a measure of financial ability to buy some sort of a single-family house. The most serious fault of this index, however, is that the resulting ratios of persons per tax return filed do not reflect differences in general price levels from city to city. This level would determine in many cases whether an annual salary on which an income tax return would have to be filed was actually large enough to qualify its receiver as a potential house buyer.

The results of the classification based on this index as presented in Table VI substantiate the indications of the other indexes. The well-to-do communities, those with the largest number of potential buyers and builders of single-family houses, do not show a small increase in apartment-house construction. On the contrary, the multi-family unit movement in them seems stronger than in the less wealthy cities.

TABLE VI. INCREASE IN PERCENTAGE OF FAMILIES PROVIDED FOR IN NEW MULTI-FAMILY DWELLINGS IN CITIES CLASSIFIED BY NUMBER OF PERSONS PER INDIVIDUAL INCOME TAX RETURN IN 1925

Classes of Cities	Number of Cities	Percentage of Families Provided for in New Multi-Family Dwellings		Increase in Multi-Family Percentage
		1921	1928	1921–1928
Quartile Group 1 (persons per individual income tax return 5–15)	64	30.74%	63.33%	32.59%
(New York and Chicago excluded)	(62)	(20.08)	(43.91)	(23.83)
Quartile Group 2 (persons per individual income tax return 16–19)	64	15.13	32.80	17.67
Quartile Group 3 (persons per individual income tax return 20–24)	63	12.25	34.35	22.10
(Philadelphia excluded)	(62)	(12.83)	(37.32)	(24.49)
Quartile Group 4 (persons per individual income tax return 25–112)	64	10.80	25.51	14.71

[33] Ratios from *Retail Shopping Areas*, J. Walter Thompson Co., 1927. For income tax regulations see Montgomery, *Income Tax Procedure*: 1925, Chapter V, particularly pages 94-108; 1926, Chapter V, particularly pages 99-118; 1927, Chapter IV, particularly pages 59-73. In the 1926 Revenue Act the minimum net incomes were changed to $1,500 and $3,500 from $1,000 and $2,500 respectively. The 1925 figures given by the Thompson Co., however, relate to incomes received in 1925, but taxed under the Revenue Act of 1926. See Preface, p. IV.

On the strength of the results presented in Tables, IV, V, and VI, one may tentatively conclude that the apartment-house increase is a movement not limited to the poorer communities; high purchasing power *in itself* seems associated with a strong multi-family house trend rather than with the maintenance of the position of the single-family house. This fact throws into question another popular explanation of the apartment-house movement which pictures the growing popularity of this form of dwelling as the outcome of economies realized from the lower construction costs per family. No claim is made of the entire untenability of such an explanation; the city as a unit for reporting building data is too large to make possible a fair test of this explanation. But this conclusion with those previously found suggests that the clue to an understanding of the apartment trend may be in part in the attitude of people toward (a) the comparative merits of home ownership as an investment and (b) the desirability, or at least, the acceptableness of apartment-house living. One method of testing the strength of this explanation is described in the Section II.

Synopsis of the Analysis of Building Permit Data

The chief findings in this study of the apartment-house increase may be concisely stated as follows:

(1) Most of the ready explanations of the apartment-house increases are unsatisfactory. The increase was felt in an appreciable degree in cities in all sections of the country. It was not, from 1921-1928, closely associated with the size of a city's population, the prior existence of a relatively large number of apartment houses, nor the rapidity of population growth. The movement gained rather than decreased in momentum as the general housing shortage of the years of the war and immediate post-war period was filled. Occupational character of the cities' populations, differences in building material prices and in building trades labor rates had no clear connection with this shift in residential construction.

(2) The apartment-house movement was much stronger in metropolitan centers and their suburbs than in the independent cities. However, the amount of increase was nearly the same in the suburbs as in the metropolises and the apartment-house percentage of total families provided for approximately doubled during the eight years in all three classes of cities.

(3) Cities with zoning ordinances had a much larger increase in multi-family house construction than unzoned cities. Recent building code revision and heavy tax burden on urban real estate were connected with a rapid apartment-house increase. An inverse relation was found between the multi-family house movement and the relative size of the cities' transit systems. Although cities with the very lowest land values in medium grade subdivisions and in workers' residential sections had moderately strong increases in apartment-house construction, a slight degree of association was found between high residential land values and apartment-house increase.

(4) Cities with the high indexes of community wealth and income generally had the higher apartment-house increases. This fact suggests that the movement is not entirely and, indeed, may not be chiefly a matter of economy. Further information is needed on the attitude of the different income classes of urban populations as to the merits of residential urban properties as investments and the satisfactoriness or acceptableness of apartment-house living.

Part II. Attitudes Toward Home Ownership and Tenancy

Purpose of This Section

A RAPID increase in the building of apartment houses over a period of years will result in a decline in home ownership. One method, therefore, of seeking an explanation of the recent multi-family house movement is to find out what motives or considerations are impelling people to own or to rent their homes. Many dangers are found in such a method but it was tried on a relatively small scale, and will be briefly dealt with here chiefly for two reasons.

First, most, but not all, of the hypotheses tested previously in this study have rested on the assumption that urban inhabitants by and large prefer living in single-family houses owned by themselves and that a larger increase in the building of apartment houses indicates some obstacles to the achievement of this end. This assumption is clearly open to question and some of the facts revealed in the foregoing parts of this article, particularly the last section which showed a stronger increase of multi-family houses in well-to-do cities than in the poorer cities, strengthen that question. A direct inquiry as to the reasons which influence ownership or tenancy of residences might be expected to throw some light on this fundamental issue in the preceding analysis.

In the second place, aside from the other parts of this study the question of the ownership and tenancy of urban homes has long been in need of objective, quantitative study. Probably no other issue of equal economic importance has been more subject to wishful thinking, prejudiced statement, shoddy sentiment, and cheap moralizing. Even those discussions which show that the writer had tried to distinguish between the reasons and considerations actually influencing the house owner or tenant and those which the writer believes ought to influence him, consist of mere lists of reasons without reliable indications of their relative significance to different classes of urban residents. The questionnaire section of this study perhaps may be the beginning of disinterested study of this subject and possibly may furnish some guidance to others who will be able to carry the study much farther and with an improved technique.

The Questionnaire

The questionnaire sent out consisted of three parts; an introductory letter, a series of questions which are reprinted below and on the basis of which the returns might be classified, and lists of possible reasons for owning or renting of which the owner or renter, respectively, was asked to indicate the three which influenced him most and the order of their importance in his mind. This rating of reasons, i. e., first, second, and third in importance, although deliberately restricted to only three was not successful. Many did not make the rating, others stated that the rating given was questionable in their minds, some indicated two or more reasons of equal importance for second or third place. For these and other reasons the ratings given have been ignored in the analysis and the relative weight of the different reasons is judged by the frequency of

their occurrence as of major importance to the persons filling in the questionnaire. After each list of questions blank space was left for additional reasons with the request that they be ranked with those listed. Finally, the owners were asked if they wished to sell and become renters and the renters were asked if they wished to become owners.

The questions asked of both renters and owners are:[34]

Questionnaire for both Renters and Owners:

1. *Residence*: Address of present residence.
   Street (Number and name).....
   City.....
   State.....
   How long have you lived at this address?.....
   Type of residence:
   This building is a
   Single-family House.....:
   Two-family House.....:
   Apartment House.....:
   Apartment Hotel.....:
   Just before moving into my present residence I lived in a
   Single-family House.....:
   Two-family House.....:
   Apartment House.....:
   Apartment Hotel.....:
2. *Occupation*
   Present occupation of head of family (carpenter, merchant, lawyer, clerk, etc.) .....
   Do you work in the same city or village in which you live.....:
   If not, name the city in which you work:.....
3. *Size of Family*
   Are you married?.....:
   Single?.....:
   Age of head of family.....:
   Number of children under 7 years of age living at home.....:
   Number of children from 7 to 14 years living at home.....:
   Number of children over 14 years living at home.....:
   Number of roomers or lodgers?.....:
   Others.....:
4. *Nationality and Race*
   Race: (Check one)
   Caucasian.....;
   Negroid.....;
   Mongolian.....;
   National descent of husband (German, English, Italian, etc.).....;
   of wife.....;
   Country of birth of husband.....;
   of wife.....:
5. *Income*
   Within what income group does the family income normally fall? (If the earnings of more than one member of the family are used to pay family expenses include all such earnings in family income. If the last year's income is unsually large or small take an average of the last 3 years' income as the "normal" family income).

Under–$1,800.....	$5,000–$7,500.....
$1,800–$3,000.....	$7,500–$10,000.....
$3,000–$5,000.....	Over–$10,000.....

6. *Home Ownership*
   Was most of your childhood spent in a home owned by your parents.
   for husband.....:
   for wife.....:
   Do you own the building in which you now live?.....
   Do you own any other urban residential buildings?..

The lists of reasons for present housing status follows:

For Home Owners:

(If you are buying your house on an installment payment contract you are considered an owner even if you have not yet title to the property).

If other reasons beside those listed have influenced you, please add them at the bottom of the list and consider them in ranking the 3 reasons which influenced you most strongly.

Reasons for Owning

(a) Payments to home ownership force me to save money and "get ahead."
(b) Owning a house is cheaper than renting.
(c) Land values will probably rise in the neighborhood.
(d) Children are better off if their parents own the home.
(e) Owning a home gives me a sense of position and importance in civic and neighborhood affairs.
(f) Apartment districts lack sufficient parks and play space.
(g) I enjoy working around the house, making a garden, etc.
(h) Most of my friends own their homes.
(i) I believe that home ownership is a very safe form of investment.
(j) Installment payment arrangements on the house encouraged me to start purchasing.
(k) The home owner is protected; he "always has a roof over his head."
(l) An owned home gives me a much more satisfactory place in which to entertain.
(m) Home ownership improves my credit.
(n) Apartment districts are too noisy and too congested for satisfactory living.
(o).....
(p).....

For Renters

Reasons for Renting

(a) Renting increases my bargaining power at my job; I can leave easily for a better position.
(b) Renting is cheaper than owning a house.

[34] The number of questions which were asked, of course, had to be kept as low as possible lest replies be unduly discouraged. The questions listed were put on one, legal-size sheet of paper. Other questions would increase the value of the returns and might be added or else might replace some of those which were included. Inquiries as to rentals or purchase price paid for homes, the number of rooms now occupied, and the ownership or tenancy status in the previous dwelling probably could be added without making the questionnaire too forbidding.

(c) I am unable to judge good construction in houses; the chance of poor construction is too great.
(d) The type and character of residential neighborhoods change too rapidly to make buying safe.
(e) Renting increases my freedom; I am not tied down to one section of the city.
(f) The tax burden on home owners is too heavy
(g) I am unable to judge land values. The chance of being sold a poor lot is too great.
(h) Financing charges for the purchase of a house are too heavy.
(i) Buying a house is a poor investment for me; it is too much like "carrying all the eggs in one basket."
(j) The expense incidental to the purchase of real estate (fees for title examination, commission, etc.) are too large.
(k) Renting allows one to adjust the size of the home to changes in the size and requirements of the family.
(l) I prefer to spend my savings for an automobile, a radio, and other comforts rather than for a house.
(m) Investment in a house is too fixed; it is difficult to sell at the times when one needs the money.
(n) In rented rooms I have the use of more modern equipment and furnishings (such as, electric refrigeration, kitchen appliances, etc.) than I could afford to buy and install in a house of my own.
(o) Installment payments for a house are too heavy in times of business depression and unemployment.
(p) Apartment-house living relieves me of the annoying jobs of mowing the lawn, shoveling the snow, etc.
(q) All residential neighborhoods with good transportation have too high land values.
(r) Servants cannot be secured for the care and upkeep of a house.
(s) I prefer to use my savings for travel, or the children's education rather than for a house.
(t) I believe that building prices are inflated and probably will come down within the next few years.
(u).....
(v).....

All of the problems faced in making out these lists cannot be recounted here nor can the advisability of many changes be discussed. The lists were thought to be fairly inclusive and to be probably a more satisfactory means, both in number and comparability of returns secured, than a request to each person questioned to give in his own words his reasons for owning or renting. The reasons were popularly phrased and no terms were defined. As a result many of the statements overlapped considerably. This is undoubtedly a weakness but each statement does suggest a fairly clear reason and is at several points distinct from every other. This method can be improved but it seems clearly superior for most classes of urban residents to the alternative of closely defined terms and rigorously segregated reasons. The reasons listed were not grouped nor arranged in any order for fear of focusing attention on one or more reasons.

The Groups to Which the Questionnaire Was Sent

The costs of distributing large numbers of questionnaires, the desirability of direct contact with heads of organizations from whose membership the mailing list was made, and the experimental nature of the study combined to limit the questionnaire to the city of Chicago and its metropolitan region with a few replies from adjacent towns in Illinois. Five groups were covered by the questionnaire: (A) employees of the Peoples Gas and Light and Coke Company of Chicago, who represent the unorganized, "white-collar" workers; (B) members of the City Club of Chicago which consists in the main of well-to-do professional and business men; (C) secretaries and delegates of trade unions in Chicago and (D) in towns outside of Chicago, who represent the organized skilled and semi-skilled workers; and (E) faculty and staff members of Northwestern University who are representative of the lower paid professional classes and who include not only full-time teachers but members of the faculties of the professional schools, many of whom spend part of their time and derive considerable income from professional practice. The returns from the organized workers, groups C and D, did not give sufficient weight to their relatively large classes so additional data were secured by interview with workers, mostly unorganized

and living in the west side of Chicago.[35] This group is referred to as X, miscellaneous labor. To 6,784 questionnaires sent out in September, 1930, 1,509 replies (or 22.2% of the number sent out) were received before the returns were closed for editing in January, 1931. Questionnaires added by interview numbered 373 bringing the total returns to 1,882, distributed as shown in Tables VII, VIII, and IX.

TABLE VII. DISTRIBUTION OF QUESTIONNAIRES BY CLASS GROUPINGS.

Class	Questionnaires Sent		Questionnaires Returned		
	Number	Percentage of Total	Number	Percentage of Class Total	Percentage of Total Returns
Total...	6,784	100.0%	1,882	.....	100.0%
A—Peoples Gas	1,000	14.7	470	47.0%	25.0
B—City Club..	1,376	20.3	445	32.3	23.6
C—Organized Labor.....	2,211	32.6	158	7.1	8.4
D—Organized Labor.....	1,261	18.6	143	11.3	7.6
E—Northwestern University Faculty.	936	13.8	293	31.3	15.6
X—Miscellaneous Labor...	.....	.....	373	.....	19.8

TABLE VIII. DISTRIBUTION OF HOME OWNERS AND RENTERS REPLYING TO QUESTIONNAIRE, BY CLASS GROUPS.

Class	Total		Owners		Renters	
	Number	Percentage of Total	Number	Percentage of Class	Number	Percentage of Class
		%		%		%
Total.....	1,882	100.0	1,014	53.9	868	46.1
A—Peoples Gas....	470	25.0	217	46.2	253	53.8
B—City Club.....	445	23.6	269	60.4	176	39.6
C—Organized Labor	158	8.4	91	57.6	67	42.4
D—Organized Labor	143	7.6	95	66.4	48	33.6
E—Northwestern University Faculty.....	293	15.6	117	39.9	176	60.1
X—Miscellaneous Labor.....	373	19.8	225	60.3	148	39.7

Limitations in the Method and the Findings

Before the major findings of this part of the study are presented the reader should have clearly in mind several limitations of the method followed and of the data returned by the questionnaires. At least six facts must be recognized if the reader is to appraise intelligently the material of this section and to avoid unguarded interpretations or generalizations of it: (1) As pointed out before, most of the replies which supply the primary data are from only one metropolitan region. This region in many ways is immature and its central city, Chicago, has experienced a very rapid recent growth. The writer makes no claim for the applicability of the findings to cities in other sections of the country, particularly in the East. (2) The replies were made during one of the deepest business and industrial depressions in the history of the country. (3) The sample does not give sufficient weight to the lower-income groups. The need for data on the distribution of income among city dwellers is most urgent but no one who is acquainted with the inadequate data on the distribution of personal income in the United States as a whole or who is even casually familiar with living conditions in and around Chicago would imagine that the 30% of the returns which report normal annual

[35] The interviews were made by Mr. William Absolon, a union secretary in Chicago and a part-time student at Northwestern University. Mr. Victor A. Olander, secretary and treasurer of the Illinois State Federation of Labor, Mr. John Fitzpatrick, president of the Chicago Federation of Labor, Mr. Everett L. Millard, president of the City Club of Chicago, and Mr. Bernard J. Mullaney, vice president of the Peoples Gas Light and Coke Company of Chicago, generously assisted in making up the list to which the questionnaires were sent. Miss Elizabeth C. Snow and Mr. Arno Koepke, Henry Strong Scholars in Urban Land Economics in the Institute during 1930-31, did practically all of the editing and analyzing of the returns with the aid and advice of Mr. Adrian Theobald of the Institute staff. Members of two or three classes in Urban Land Economics and in Housing at Northwestern University helped in making and revising the lists of reasons included in the questionnaires and several members of the Institute staff and of the University faculty criticized the entire questionnaire. To all of these persons the writer wishes to acknowledge his debt and to express publicly his thanks with the hope that others who may make similar studies on this subject may be blessed with the same hearty cooperation and assistance.

incomes of $5,000 and over represents the relative position of this income group in the total metropolitan population. (4) The means of securing the list of persons to whom the questionnaire was sent unavoidably weighted the sample with the more stable and "settled" classes of the population. The alternative method of a random sample would have avoided this difficulty but would have had other weaknesses which would have been of greater concern. (5) Many persons will question the degree of accuracy with which most people can analyze their reasons for any line of action. The writer, without wishing to seem to hold that most men are highly rational beings, does believe, however, that in most cases the question of owning or renting a home is decided only after some attempt at weighing the pros and cons, if for no other reason than that the financial outlays involved are the largest which are faced by most families. If it be admitted that this and other facts force a fairly careful consideration of the question, he further believes that the heads of the families can usually distinguish and report the two or three considerations which chiefly determined their decision. (6) Finally, the reader should never forget that the data of this section of the study are opinions on home ownership and tenancy and are always to be treated as opinions and not as established facts. For example, the belief expressed by many persons that home ownership is a very desirable form of investment is subject to several interesting interpretations but in itself the belief certainly does not establish the excellence of home ownership as an investment. In other words, the frequency with which any opinion is reported does not establish the statement as the truth.

TABLE IX. DISTRIBUTION OF OWNERS AND RENTERS BY INCOME GROUPS.

Income Groups	Total		Owners		Renters	
	Number	Percentage of Total	Number	Percentage of Income Group	Number	Percentage of Income Group
		%		%		%
Total	1,882	100.0	1,014	53.9	868	46.1
A—Under $1,800	394	20.9	215	54.6	179	45.4
B—1,800–3,000	621	33.0	330	53.1	291	46.9
C—3,000–5,000	286	15.2	118	41.3	168	58.7
D—5,000–7,500	195	10.4	95	48.7	100	51.3
E—7,500–10,000	114	6.1	74	64.9	40	35.1
F—Over 10,000	248	13.2	169	68.1	79	31.9
Unclassified	24	1.3	13	54.2	11	45.8

The Major Findings

Not all of the information obtained from the replies to the questionnaires which has direct bearing on some aspect of home ownership or tenancy will be presented here. Only a few facts which seem to bear on the increase in the building of apartment houses will be briefly dealt with in this section.

Characteristics of Home Owners and Renters. Before taking up the main purpose of this section it may be noted that the answers to the questionnaires supplied a clear statement of certain characteristics of home renters and owners which, although hardly open to serious question, are usually very vague and general. Of the home renters in the sample 60.3% lived in apartment houses or in apartment hotels (6.6% in the latter), 23.8% in two-family houses, and 15.4% in single-family houses. The distribution of home owners was 6.6% in multi-family dwellings, 13.9% in two-family houses, and 78.8% in single-family houses. The percentages of persons in two-family houses suggest a relative position in the housing facilities of this metropolitan area which is seldom realized.

The relative mobility of home renters is indicated by the fact that 77.7% of those in the sample had lived less than five years at their present addresses, while the corresponding percentage for home

owners was 28.6%. This mobility of residence, however, seems to be a characteristic of renters rather than of apartment dwellers *alone*, for of 134 renters in single-family houses, 94 (70.1%) had lived at their present address less than 5 years, while the corresponding percentage for apartment renters was 79.8% and for renters in two-family houses, 77.8%.

As a class, the home renters in the sample are more often childless; 22.0% of the home owners have no children while 44.7% of the home renters are childless. Moreover, 54.4% of the owners have two or more children while only 29.7% of the renters have families of this size. However, the fact should be pointed out that home renters living in single-family and two-family houses have almost as many children as the home owners. Of these classes of renters only 29.1% of the single-family dwellers are childless while 45.5% have two or more children; only 26.6% of renters in two-family houses are childless, and 43.5% have two or more children. This scarcity of children in families living in multi-family houses should be remembered in the subsequent discussion of reasons assigned for home tenancy and ownership.

Reasons Given For Home Ownership. The most influential considerations leading to home ownership as indicated by the frequency of listing were:

Rank	*Reason*[36]
1	Welfare of children (d)
2	Safety of investment (i)
3	Forced saving (a)
4	Amenities (g)
5	Protection—security (k)
6	Apartment districts lack play space (f)
7	Apartment district too noisy (n)

The reasons ranked third, fourth, and fifth were very close together in frequency of selection as were also the reasons ranked sixth and seventh. The reasons of least importance, judged in the same way, were: "most of my friends own their homes;" "home ownership improves my credit;" and "an owned home is a much more satisfactory place in which to entertain." In general, the frequencies were well distributed, a fact which indicates the complexity of the problem to many families.

The prevalence of the ranking reasons in about the same order in different occupational and income classifications is striking. Probably the most significant variation is shown by classification by income. "Welfare of children" is ranked first in every income class and "amenities" (working around house, making gardens, etc.), and "security and protection" have fairly constant rating in about fourth or fifth place, except that the last mentioned disappears from the first seven rankings in the higher income brackets. The investment considerations, including safety of investment and forced saving, hold high rank in the lower income groups, the first in income groups under $7,500 and the second in groups under $3,000, but are replaced in the groups with higher incomes by reasons which stress the undesirable physical characteristics of most apartment-house districts.

One of the chief difficulties of this kind of analysis is the difference in the scope or breadth of the different reasons assigned. For example, the reason in the home owners' list, "land values will probably rise in the neighborhood," is a relatively simple statement; it refers to one and only one possible influence. "The reason that children are better off if their parents own the home," on the other hand, is relatively complex; it suggests or implies among other things greater freedom, larger, more accessible

[36] For complete statements of reasons as they appeared on questionnaires see page 317. Only half of the reasons are given rank. To carry out the ranking further would give a spurious impression of accuracy.

and less dangerous open spaces, more air and sunlight, and more carefully chosen playmates. As pointed out before, to narrow each statement to one carefully defined meaning would have increased the possible accuracy of the replies but also probably would have decreased enormously the number of returns. Again, the accuracy of the returns might conceivably have been decreased also because of the length of the questionnaire and the fact that many persons do not sift their reasons for action down to their elements but are likely to deal in fairly broad and general ideas.

One way of partially avoiding the dangers of the unequal scope of the statements of consideration is to bring them into fairly large groups centering on one idea or closely interwoven set of ideas. This grouping may bring out facts and relationships which the treatment of individual statements does not touch.

Many classifications are, of course, possible, and no one will be entirely satisfactory for any purpose. For the purpose of this article one classification into three groups seems most useful.

This classification of reasons gives Group I, which includes financial considerations of one sort or another, a total of 1,016 citations by the home owners who replied to the questionnaire; considerations of family welfare (Group II) were mentioned 1,226 times, and the distinctly negative, "anti-apartment" reasons (Group III), 321 times. In other words, the financial reasons as a group assume a much larger place than a cursory examination of the weight given to individual reasons, as stated in the questionnaires, would reveal.

Classification of Reasons for Owning a Home

Group I. Statements of financial advantages including investments, current savings, and speculation.

- (a) Payments to home ownership force me to save money and "get ahead"
- (b) Owning a house is cheaper than renting.
- (c) Land values will probably rise in the neighborhood.
- (i) I believe that home ownership is a very safe form of investment.
- (j) Installment payment arrangements house encouraged me to start purchasing.
- (m) Home ownership improves my credit.

Group II. Statements involving family welfare, including the pleasures and advantages of the heads of families.*

- (d) Children are better off if their parents own the home.
- (e) Owning a home gives me a sense of position and importance in civic and neighborhood affairs.
- (g) I enjoy working around the house, making a garden, etc.
- (k) The home owner is protected; he "always has a roof over his head."
- (l) An owned home gives me a much more satisfactory place in which to entertain.
- (h) Most of my friends own their homes.†

*Several of the reasons in Group II suggest comparisons unfavorable to apartment districts as at present developed.

†Inclusion of (h) is a minor question as it is the least favored of all reasons given.

Group III. Negative reasons, distinctly opposed to some characteristic of apartment-house districts.

- (f) Apartment districts lack sufficient parks and play space.
- (n) Apartment districts are too noisy and too congested for satisfactory living.

Reasons Given for Home Tenancy. The home renters who replied to the questionnaire as a class gave the reasons the following ranking:

Rank	*Reasons*[37]
1	Renting is cheaper than owning (b)
2	Financing costs of owning too high (h)
3	Tax burden on owners too heavy (f)
4	Investment in house too fixed (m)
5	Renting increases freedom (e)

[37] See page 317-8.

6.....Installment payments on house are dangerous (o)
7.....Owned house a poor investment (i)
8.....Costs incidental to purchase of house too high (j)
9.....Land value too high (q)
10.....Renting increases bargaining power (a)

The reasons ranked fourth, fifth, sixth, seventh, and eighth, were closely bunched in the number of times which each was mentioned. The reasons of least influence on the persons in the sample were: inability to judge land values, scarcity of servants, and inability to judge good construction.

As in the sample of home owners, some variation in the rating of the various considerations was found when the replies were grouped into income classes. "Renting is cheaper than owning" was the first reason cited in every income group except that of persons with incomes under $1,800, in which the cost of financing the purchase of a house was easily of first importance. Financing costs of ownership ranked second in the income group from $1,800 to $3,000, fourth in the class from $3,000 to $5,000, and was well down the list in the higher income groups. "The charges incidental to the purchase of real estate" was third in times mentioned by persons with incomes under $1,800. The tax burden on residential real estate was ranked fifth by the group with lowest incomes, was considered third in importance by the groups from $1,800 to $7,500, and dropped in the ranking by the two highest income classes. Home renters with incomes over $3,000 a year gave high ranking (second or third) in the list, to the fixity of investment in real estate. The income group with incomes over $10,000 emphasized the relative ease with which renters can adjust the size of their living quarters to changes in the size of the family.

The 20 reasons listed in this part of the questionnaire for renters are quite easily grouped into five classes:

Classification of Reasons for Renting a Home

Group I. Expense reasons.
- (b) Renting is cheaper than owning a house.
- (f) The tax burden on home owners is too heavy.
- (h) Financing charges for purchase of a house are too heavy.
- (j) The expense incidental to the purchase of real estate, (fees for title examination, commission, etc.) are too large.
- (q) All residential neighborhoods with good transportation have too high land values.

Group II. Investment reasons.
- (c) I am unable to judge good construction in houses; the chance of poor construction is too great.
- (d) The type and character of residential neighborhoods change too rapidly to make buying safe.
- (g) I am unable to judge land values. The chance of being sold a poor lot is too great.
- (i) Buying a house is a poor investment for me; it is too much like "carrying all the eggs in one basket."
- (m) Investment in a house is too fixed; it is difficult to sell at the times when one needs the money.
- (o) Installment payments for a house are too heavy in times of business depression and unemployment.
- (t) I believe that building prices are inflated and probably will come down within the next few years.

Group III. Considerations of mobility.
- (a) Renting increases my bargaining power at my job; I can leave easily for a better position.
- (e) Renting increases my freedom; I am not tied down to one section of the city.
- (k) Renting allows one to adjust the size of the home to changes in the size and requirements of the family.

Group IV. Personal convenience.
- (n) In rented rooms I have the use of more modern equipment and furnishings (such as electric refrigeration, kitchen appliances, etc.) than

I could afford to buy and install in a house of my own.

(p) Apartment-house living relieves me of the annoying jobs of mowing the lawn, shoveling the snow, etc.

(r) Servants cannot be secured for the care and upkeep of a house.

Group V. Preferential expenditure.

(l) I prefer to spend my savings for an automobile, a radio, and other comforts rather than for a house.

(s) I prefer to use my savings for travel, or the children's education rather than for a house.

This list arrays the groups of reasons in the order of their importance to all home renters in the sample and, with three slight exceptions, to all classifications of renters by income, occupation, and by the organization and groups which made up the sample. The three slight exceptions are the changing of fourth and fifth position, i. e., the preferential expenditure reasons very slightly outranking the personal convenience reasons, in the Northwestern faculty, the miscellaneous labor, and the skilled labor groups. In none of the groups, however, do the preferential expenditure reasons, the so-called "new competition," occupy more than a very minor position in the number of times listed.[38] The two groups of reasons of overwhelming importance as judged by the frequency of listing are the expense and investment reasons which together make up from 63% to 89% of the total number of times the various reasons were checked. The lowest percentage was among the City Club members and the highest among the unskilled laborers. For all the home renters in this sample this percentage was 75, of which 48% were in Group I, expense reasons, and 27% in Group II, the investment reasons. Quite clearly this sample of home renters regard the financial considerations to be of primary significance.

Home Ownership and Tenancy Among Parents of Present Heads of Families. Before trying to appraise the aid which the questionnaire has given to an explanation of the apartment-house movement two more comparisons of the home owners and home renters in this sample should be made. First, in conjecturing on the non-pecuniary factors which possibly might stimulate the building of multi-family houses, the influence of the childhood environment of the present owners and renters seemed promising. Persons who were reared in a home owned by their parents and whose friends and companions probably came from similar homes might be expected to look on home ownership as a "natural thing." Those brought up in rented homes, on the other hand, might consider ownership less seriously and look upon it as at best a luxury. The questionnaire, therefore, included an item to be answered both by the husband and wife of each household: "Was most of your childhood spent in a home owned by your parents?" The replies to this question from the sample group give practically no support to this hypothetical influence of childhood environment as indicated by home ownership of parents. Of the 924 families replying to the questionnaire in which both husband and wife were brought up in homes owned by their parents, 56.5% are home owners, 43.5% are renters; of 312 families in which the parents of neither husband nor wife owned the home, 48.1% are now owners, 51.9% are renters; and of 501 families in which either the husband or wife (but not both) had lived in a home owned by his or her parents, 52.5% are now owners and 47.5% are now renters. A variant of this question would have been to ask the birthplace

[38] The significance of this classification of reasons to the real estate business and to future housing development cannot be overestimated.

and home addresses during childhood of the husband and wife and then to classify the replies by rural and urban dwellers and by population size groups of the latter. This latter method of measuring the possible effect of childhood environment was not followed but is suggested here as a possible addition to later studies.

Desire to Change Ownership or Tenancy Status. Finally, both owners and renters were asked if they desired to change their ownership status, i. e., owners were asked if they wished to sell their homes and to rent, renters were asked if they wished to buy. These direct questions were asked primarily to see if owners were to any considerable degree becoming dissatisfied and were looking with more favor on living in apartments. This sample of owners and renters does not show such a change of heart. Of the total number of replies (1882) 1,698 answered these questions; of this number 913 were at the time owners and 785 were renters. Of the owners only 14.0% wished to sell and to become renters while 53.0% of the renters desired to become owners. In other words, the replies secured in the study indicate, quite contrary to the writer's previous impression, by the way, that a very considerable portion[39] of the economic and social classes represented still has as one of its aims or goals the ownership of a home. Whether this is a wise attitude for many of them is certainly open to question but these replies clearly indicate that the increase in multi-family houses in the Chicago region is not caused by a wholesale change of attitude toward the relative advantages of home ownership and home tenancy.

Synopsis of Section II

At the end of Section I the tentative conclusion was drawn that the rapid increase in the building of multi-family houses in recent years reflected a changed attitude toward the desirableness and acceptableness of apartment-house living and toward home ownership as an investment. This conclusion also implied that considerations of costs and economy in expenditure might not be the chief forces in the apartment-house movement. This discussion of the part of the replies to the questionnaire which shed most light on the trend toward multi-family living may be summarized in four statements:

1. Among the quasi-stable classes of persons in the Chicago region the cost and economy considerations seem clearly to be the major group of forces contributing to the multi-family house movement.
2. The relative merits of home ownership as an investment play a secondary but still a prominent part in the problem of owning or renting.
3. Considerations both of cost and of investment strength of ownership decrease in importance in the higher income classes.
4. Non-pecuniary considerations do not seem to be of as great weight as the cost and investment reasons and, in so far as they operate, those which have been segregated seem to oppose the increase in apartment building.

Implications of Multi-Family Housing

This study of recent housing in cities of the United States has been carried through in as objective and scientific a spirit as possible. The purpose of the work has been to show the relations of the increase in apartment-house building to other economic conditions and forces, including the attitudes and opin-

[39] 70.7% to be exact.

ions of those persons who constitute the market for different kinds of housing. No attention has been given to the economic interests of the various individuals and groups who may have considerable stakes either in the continuance or the decline of this movement. However, now that the chief findings of the study have been formulated in the synopses of Sections I and II, some of the influences of this trend in housing on other phases of city life and physical development should not be overlooked.

The bearing of this multi-family house movement (if unchecked) on city planning, zoning, subdivision, street and highway development, and public utility installation, need only be mentioned. Fortunately many of these points of contact are obvious. Continued concentration of population in apartment houses makes necessary a re-examination of the standards of air, light, and yard space in residential districts. Public play areas will have to be enormously increased and should be increased in those sections where land values are relatively high because of potential apartment-house use. Street areas[40] and all public utility facilities, municipal and otherwise, sufficient for the increased density of residential population must be anticipated and planned. Many persons will deem advisable the increase of these facilities in already built-up areas, rather than their rapid extension into recently subdivided areas, the absorption of whose lots will tend to be slowed up by the multi-family house trend.

Quite as clearly the prevailing ideas of the correct proportion between zoned apartment and single-family areas may have to be revised drastically. The possibility of added regulations, zoning, educative, or otherwise, aimed to check the virulence of obsolescence, which has rapidly blighted most apartment-house districts in the past, should become a consideration of wide concern. The relative number of workers in the different building trades has already changed somewhat and will undoubtedly continue to do so if the trend toward large housing units continues. The use to be made of money formerly spent by many families in buying a single-family house will be a fact of more than passing significance to business men, as well as to economists.

One step removed are the effects of the probable change in living habits of apartment dwellers. Will they patronize neighborhood and subcenter shopping districts more or less than those who live in one- and two-family houses; will their consumption per family of gas, light and power be diminished markedly; will their demand for transportation facilities change; will more transit service to outlying parks and amusement centers be required? Finally, how will schools, community organizations, and churches be affected and what adjustments must they make?

The probable implications of the multi-family trend just suggested, with many combinations and some additions, constitute the practical application and justification of this study. But the picture must not be overdrawn. Even the rapidly growing cities of this country are not made over in an eight-year period. The elements of a fundamental change, however, are in this movement in residential building and will force themselves on popular attention if continued for another decade or so.

When the movement does become more generally recognized, in all probability two groups will clamor for atten-

[40] Street areas in particular will require attention. Their inadequacies are caused by the fact that many of them were laid out in the horse and buggy era and their deficiencies are being aggravated by the piling up of apartments along their frontages.

tion. One will decry the whole movement as an undesirable growth, as a menace to American standards of life, and will urge numerous means of halting it and restoring conditions of the "good old days." The other group will explain comfortingly that the movement is a "natural" development of economic conditions, possibly even the inevitable outcome of the working of "economic laws," and, therefore, should not be attacked lest dire consequences ensue. However, if further analysis of the movement substantiates the findings of this first attempt, neither of these groups will be very helpful in forming a rational program or a sensible public opinion. Rather the facts should be pointed out that the movement is not a simple one, that it is associated quite closely with certain economic conditions, that most of the snap judgments and handy explanations of it do not bear careful scrutiny, and that its effects are by no means entirely harmful nor entirely beneficial to all classes of urban dwellers. If these four facts can be impressed on all those concerned with the matter, the way will be somewhat prepared for a discussion of the advisability of changing some or all of the economic conditions which disinterested study has shown to be connected with the apartment-house increase or of adjusting other economic phases of the cities to that increase. These decisions at best will not be easy but, if made with the background and in the way just proposed, they will probably lead to a more wholesome and satisfactory type of urban development.

Summaries of Research

A Classification of "Uniform Rate Areas" for the Electric Light and Power Industry

ELECTRIC utility executives have only recently begun to look at rate-making from a system-wide as well as a local standpoint. For 10 years every effort of those in command of what are today our larger systems was directed at external expansion or, to use a word which has taken on a specific meaning to the industry, the desire for "integration" of ownership and control became the driving force.

The obvious result of this movement was a realignment of power sources for hundreds of communities. With the goal in mind of creating the most efficient electrical generation and distribution system for the *long run*, the typical management would erect a few generating plants of high capacity at strategic points about the service area, throw out a network of transmission and distribution lines, and ruthlessly proceed to scrap much of the inefficient generating equipment which had come into its possession through the purchase of small local companies.

This shift in the character of electrical supply considerably complicated the task of setting up scientific and fair rates for current in each community in a system. During the period when each community was self-sufficient with regard to electric power, the allocation of costs and the establishment of a differential rate-schedule presented a less complex problem than when the community has lost its local source of power and become part of an intricately interconnected system along with one, two, or three hundred other towns.

Utility executives, for the most part, recognized that a new problem was confronting them, but, having little precedent to follow, a variety of results were obtained. In some cases, the rates in each community were allowed to remain as before, because of the difficulties encountered in changing a rate policy, and perhaps in the belief that consumers and commissions would overlook the need for a new policy. In others, a definite attempt at the application of the strict cost-of-service principle was made, which involved the almost superhuman task of determining just how much of the costs of the system should be carried by any given community. The difficulty here was caused to a large extent by the common situation of power being available to a town from more than one source. Each shift in the source of the current would, if the cost-of-service principle were to be strictly followed, require a shift in the general rate-level for the particular community affected.

Partly because of the difficulties of actually determining the cost of service to any given community in a system, and partly to forestall unfavorable public reaction to rate differences between communities served by the same operating company, a few executives have adopted a uniform pricing policy for all or part of the territory served by them. The first tendency in this direction is in a case decided by the California Railroad Commission in 1914[1] when the

[1] *Town of Antioch v. Pacific Gas & Electric Co.*, 5 Cal. R. C. R., decision 1655, case 400.

Pacific Gas and Electric Company was directed to *average* its generation and transmission costs for the system, with local distribution costs accounting for the only price differential as between communities served by that Company.

This action taken in 1914 has been followed by a slow but steadily increasing growth in popularity of some form of uniformity of rates over an area encompassing a number of separate communities, not contiguous with each other. The possibilities of such a system of territorial pricing have recently been brought well to the fore by several commission and court decisions, which either called for, or made possible, the adoption of such a policy.

One such action was the amendment in 1929 of section 196.03 of the Wisconsin statutes (to the effect that utility rates must be reasonable and just), by the addition of the following clause:

"For rate-making purposes the Commission may consider two or more municipalities as a regional unit where the same public utility serves said municipalities, if in its opinion the public interest so requires."

The result of this action is that the Wisconsin Public Service Commission may, at its own discretion, cause an electrical utility to consider all or parts of its territory as the unit for rate-making, ignoring political subdivisions. This action brings about an averaging of costs of service throughout the area decided upon, regardless of municipal boundaries, and results in a uniform price for each class of service throughout that area;[2] thus history is repeating itself on a larger scale, for exactly the same transition has taken place *within* the corporate boundaries of our larger cities in the past.

As a consequence of a series of commission and court decisions which were aimed directly at the *territorial* rate policies of numerous large utilities with the intention of bringing about uniform rates for like classes of service in each case, considerable interest has been aroused, in the minds of consumers as well as utility executives. That is to say, interest has been aroused in the term "uniform rate area," which is the expression that has been coined to indicate any territory in which rate-schedules are alike, regardless of corporate boundaries. Numerous articles and editorials dealing with the pros and cons of uniform prices have appeared in the periodicals of the industry, yet evident in them all is a strange lack of agreement on one important angle of the problem. No two writers agree on what a uniform rate area is; and few utility executives with whom this writer has conversed or corresponded were able to point out many existing systems and say definitely, "That comprises a uniform rate area." The difficulty is not clearly seen until one tries to do just that.

Some of the questions that arise at the very beginning are these. Is not a single city in which all customers of the same class are served at the same rate-schedule, a uniform rate area? If a utility serves a large city and several contiguous suburbs at a uniform rate, is the situation of sufficient importance to warrant its inclusion in a study of uniform rate areas? If a utility serves a hundred communities in which all residential service is provided at a single rate but with commercial and power service having different rates in each

[2]For examples of commission orders in favor of uniform pricing, see: *City of Eau Claire et al. v. Railroad Commission et al.*, P. U. R. 1922 D 666; *Idaho Power Co.*, P. U. R. 1924 C 315; *Edison Electric Illuminating Co. of Boston*, P. U. R. 1928 D 859; *Alabama Power Co.*, P. U. R. 1929 A 458, 470; *Georgia Power Co.*, P. U. R. 1929 B 156; *Re Central Vermont Public Service Corp.*, P. U. R. 1929 E 387.

town, may the territory served be called a uniform rate area? If it may, then how differentiate between such an area and one in which a uniform rate is provided for *each class* of service for the entire territory of a hundred communities?

Obviously a definition of the term is essential to a thorough understanding of modern tendencies in territorial ratemaking, but the writer, in attempting to formulate such a definition, was halted by the realization that it was impossible to arrive at a single statement which would include all important variations of uniformity and still be exclusive enough to be useful. Consequently, a *classification* of uniform rate areas was the logical result.

Broadly construed, a uniform rate area must be considered as any section of a utility's territory wherein all customers of the *same class* are served at identical rates. It will be seen immediately that this definition includes as uniform rate areas, most cities, and it is impossible to see how any broad definition can be drawn up which does not include such cases. However, such self-contained areas as these may well be left out of any discussion of this subject since the principle of uniform rates within corporate boundaries has been well established. Likewise, if two or more communities are directly contiguous, such an area might be looked upon as a single community and passed over, in spite of the fact that it may be divided for political purposes. Having eliminated these two possibilities, the writer then divides the concept of the uniform rate area in two, calling one the *strict*, the other the *loose*, or *conditional*.

The definition of the former is as follows: *A strict uniform rate policy will be thought of as the action of a utility in serving its entire territory, which must contain two or more non-contiguous communities, at uniform rates for like uses to which the service is put, no class of use being excluded, and the strict uniform rate area is comprised of the communities served in this manner.*

The loose uniform rate area is considerably more inclusive, involving a classification of four other general conditions. These conditions present many of the problems that are met in the operation of the *strict* uniform rate area as outlined above; they are uniform rate areas only to a lesser degree than that just defined, and in many cases are probably in a transitional stage toward the final goal of uniformity for all classes throughout the whole territory. Such being the case they are important in the light of both their present existence and their future possibilities. The classification is as follows:

1. Identical rates for like classes of service within groups of communities, all communities being classified on some basis, such as population. In other words, rates are uniform within groups of communities but a difference in level exists between the groups themselves.
2. Identical rates for like classes in *one* or more groups of communities, but with some communities being served at special rates.
3. Identical rates for like classes of service over the entire territory served, but with certain classes excluded from the policy, because of characteristics dissimilar from the others.
4. Identical rates for like classes of service in only a part of the utility's territory and for only a part of the classes of service.

The writer is well aware of the difficulty of presenting a clear conception of a coined term such as is being discussed

here. Therefore, to make certain that the reader will understand precisely what is being discussed, the following illustration is given.

Assume Company X serving a considerable territory which includes several communities (numbered 1 through 50) and has divided its customers, according to the type of service taken, into classifications of residential, commercial, and power. The present management has just taken charge of operations and finds that each classification is given a different rate in each of the 50 communities in the territory. The new manager decides that since residential service conditions are practically the same for communities 1 through 20, he will eliminate the special residential rates existing for these towns and substitute *one* residential rate which is uniform for these towns. Towns 1 through 20 still have special rates for commercial and power service. This illustrates the fourth condition stated above. The same condition would be illustrated if all service classifications but one were made uniform for the group of towns, and if all towns but one (i. e., 49), were included in the new group selected by the manager.

But to return to the first assumption, namely, that residential service only is made uniform for communities 1 through 20, on the theory that since conditions of rendering that service are somewhat similar in these towns, those taking the service should pay the same rate. Residential consumers in communities 21 through 50 begin to wonder why they are charged different rates when such a group as 1 through 20 are served at a single rate. Considerable talk is bandied about on the subject of comparative rates and soon the new manager reaches the decision that the best thing to do is serve residential customers at the same rate throughout the entire area of 50 communities, whereupon the policy takes on the characteristics of the third condition stated above. A similar situation would be found if all classes of service were treated in the same manner except one, e. g., power rates might be kept special for each or part of the 50 communities because of the necessity of meeting different competitive conditions.

But let us suppose that when the new manager took charge he decided that in communities 1 through 20 the conditions of service were much the same for *all* classes of service and, basing his action on that belief, he eliminated all special rates within the classes and put in their place *one rate-schedule for each class*. In other words, there is now but one rate for residential service, one rate for commercial service, and one rate for power service. This illustrates the second condition listed above.

Now assume that the manager found this policy to be successful in communities 1 through 20, and decided to classify the remaining territory on some basis which would tend as nearly as possible to place in the same class those towns having like conditions of service, in the same manner that he had formed his first group. As a result he might have 20 communities in group 1, 15 in group 2, 10 in group 3, and 5 in group 4. If energy were then sold at uniform rates for like classes of service within each group, but with a difference in level *between* groups, we have an illustration of the first condition.

And finally, if the manager were to discard his group differentials entirely and construct one rate-schedule by which there was only one rate for each class of service for all of the 50 communities, he would then be using a *strict* uniform rate policy and the terri-

tory served could be termed a *strict uniform rate area* according to the writer's definition.

It is hoped that these illustrations have served to clarify the concept of a strict uniform rate area and to show the many possible variations and degrees of uniformity that can be employed before the strict uniform policy is adopted. It is apparent that the possible variations in uniformity are almost indeterminate in such a case as this, where two variables are involved, one being limited only by the number of communities served and the other by the number of classes of service. Nevertheless, a statement of the general possibilities and practices, as just presented, should be of value in obtaining a clear understanding of the problem.

Although the *strict* uniform rate area fittingly receives the greatest amount of attention today, those areas evidencing lesser degrees of uniformity cannot be ignored, since they may be in a transitional stage. The reason for present attention to the strict uniform rate area should now be evident, although discussion of the subject is still pertinent. However, the writer wishes to point out here that, by employing conditional forms of uniformity in any of the four general manners listed and illustrated in the foregoing paragraphs, the utility manager can, in a more or less rough manner, take into account similarities in operating conditions and charge accordingly. But it would be a rare utility operating system of any extent, in which the operating conditions could be found uniform *throughout*, for the prospect is unlikely that in many such instances all communities would have similar load factors, types of load, population densities, average consumption, and transmission distances from the power supply, all of which are contributing factors to differences in the ultimate costs in serving communities over an area.

WALTER E. CAINE

Book Reviews

REPORT OF THE ST. LAWRENCE POWER DEVELOPMENT COMMISSION. Submitted to the Governor and the Legislature of the State of New York, January 19, 1931. Albany, N. Y. pp. 206.

The report of this Commission, the members of which were not appointed by Governor Roosevelt until August 14, 1930, is unexpectedly thorough considering the short period of five months within which its work had to be accomplished. In accordance with the directing statute the Commission investigated the feasibility of the St. Lawrence power project from an engineering point of view and considered the financial, marketing, and legal aspects in some detail.

Part One is made up of the majority report of the Commission proper. The work of the advisory staffs is summarized and a definite recommendation made that a "Power Authority of the State of New York" be created, and that trustees be appointed and charged with the duty of effectuating the plan. The majority report anticipates that satisfactory agreements for the disposal of power can be negotiated with the utilities. It is recommended that such contracts should contain provisions which will insure that consumers will benefit from the project, that rates while fixed initially in the contract "may be adjusted from time to time, on the basis of true cost data, and that rates fixed in the contract shall be contractual in their legal nature and shall not be subject to rate litigation."

Part Two consists of a series of reports to the Commission by the technical staffs. First, the results of two studies by the engineering staff are presented. The engineering problem in this case was complicated by the necessity of making provision for the possible future coordination of power and navigation. It was estimated that the total cost for the full power development, with the provision mentioned, would be $171,000,000, including interest during construction. The staff was asked to state the cost of electricity at the generating station bus bar and the distance over which power could be transmitted economically. On account of the many uncertainties they declined making categorical answers to these questions but, in regard to interconnection with New York City, stated that "economic requirements would demand higher transmission voltage than has been attempted outside the electrical laboratories. There is no known practical way to so design and build these lines that they will be free from interruptions. It is doubtful if there is a market for such a large block of power at high load factor in New York City which would submit to such interruptions."

In its report the marketing board discusses the problem of rates, the possibility of developing demand, and also compares the cost of St. Lawrence power with generating costs in various load centers in the State. The members of this board, in contrast to the hesitancy of the engineering staff, made definite cost estimates which serve as the basis for the Commission's opinion that the power project would be economically feasible.

The report of the legal staff is concerned with the right of the State to engage in the power project, and the national and international aspects that arise through the fact that the St. Lawrence is a navigable stream and an international boundary line.

Part Three consists of the minority report in which Commissioner Conway recommends that the proposed Power Authority be authorized to build competing transmission lines if unable to make satisfactory contracts with existing electric companies.

Through the development of the St. Lawrence project the marketing board estimates a possible saving in cost of generation of between five and twelve millions of dollars a year and, while this is important, another point in the report is more significant. The letter of transmittal recommends that consumers' rates should be controlled by contractual agreements between the Power Authority and the distributing companies. It is suggested that these rates should not be subject to rate litigation and this would be a step toward the partial abandonment of regulation by the Public Service Commission.

HAROLD W. TORGERSON

Leith, C. K. World Minerals and World Politics: A Factual Study of Minerals in Their Political and International Relations. *New York: McGraw-Hill Book Co., Inc., 1931. pp. xii, 213. $2.*

"For the first time in history it is now possible to appraise the world's mineral resources with some approach to accuracy, to anticipate the lineaments of the world mineral geography of the future, and to recognize some of the political implications in the situation."

This statement from the Foreword of Dr. Leith's book may well be taken as the key to the subject matter and point of approach used by the author. In survey, Dr. Leith points out how the rapid increase in the world's demand for minerals has changed the entire aspect of the mineral problem and introduced a new element of far-reaching consequence into the international, political picture.

The significance of mineral utilization is vividly portrayed in the rapid rise to enormous production and the converging demand centering on the largest reserves. For instance, the United States in 1929 produced more zinc than did all the world; the copper production of the world in 1929 was more than twice as great as the estimated production for all history up to the 19th century; in the United States more minerals have been mined and consumed in the last 20 years than in all its preceding history.

In logical sequence the author discusses the future geography of mineral resources, the mineral position of the nations, what the nations are doing politically, the nature of specific political measures, conservation, minerals and war, and the mineral future and politics.

In the Appendix is an explanation of the Mineral Inquiry Committee organized under the auspices of the American Institute of Mining and Metallurgical Engineers under the chairmanship of the author. The purpose of this Committee is to cooperate with government bureaus and research organizations in promoting systematic, factual studies of little known problems of the mineral industry. The whole subject of the political and international relations of minerals is so broad and the need of definite factual knowledge is so great that Dr. Leith's book will be particularly welcome because of his summary of what has so far been learned and his statement of the outstanding problems remaining to be solved.

Walter H. Voskuil

Planning and Control of Public Works. Report of the Committee on Recent Economic Changes of the President's Conference on Unemployment. *New York: National Bureau of Economic Research, 1930. pp. xxviii, 260. $3.*

This work undertakes the herculean and long-postponed task of making a quantitative analysis of the public works situation in the United States. Despite the complex, uncoordinated, and often statistically exasperating nature of the material with which he has to deal, Mr. Wolman has contrived to produce a volume replete with suggestive tables, charts, and appendices, and to reach certain conclusions possessing both validity and significance. Foremost amongst these, perhaps, are the findings that the expenditures for public works rose from about $2,000,000,000 in 1923 to about $3,500,000,000 in 1928 and 1929, and that the latter figure comprised from 35% to 40% of all construction, both public and private, in the United States. Three-sevenths of this stupendous total went into road building, the costly adjunct of an automotive age. Other major types of construction included educational buildings, hospitals and institutions, bridges, sewage systems, water supply systems, subways and tunnels, and public buildings. The public works activities and expenditures of New York City and of New York State are analyzed in two long chapters, while those of other states and municipalities and of the Federal Government are examined in less detail. In view of the fact that our municipalities, in particular, are notoriously backward in their provisions for the rapidly increasing transportation, institutional, and welfare needs of their citizens, and that many of our governmental units are well within the constitutional limitations upon their taxing and borrowing powers, it seems reasonable to expect a continuance of the upward trend in the total volume of public works.

The possibilities of employing this staggering amount of construction work to assist in regularizing employment and in smoothing out fluctuations of the business cycle are too obvious and too tempting to be overlooked. A reasonable degree of planning,

coordination, and control would permit retardation of the public works program during periods of expansion and its acceleration during periods of depression. Mr. Wolman seems to favor the latter method rather than the former for several reasons. The time element is all-important in dealing with any aspect of the business cycle; and to know when, and how much, to retard public works as a means of checking undue business expansion is a delicate task requiring more judgment and economic training than our officials are likely to have or to hire. If they retard public works too much, the effect may well be to hasten, rather than to postpone or to avoid, a decline in business activity. Private industry, too, might become even more reckless if it came to be felt that one of the functions of the public authorities was to correct the excesses of boom times. The rise in money rates and drop in bond prices characteristic of a period of activity, together with the difficulty of securing labor, usually do bring about some retardation of public works; and this, in view of the pressing need of many communities for improvements, constitutes as much, probably, as is necessary or desirable.

Acceleration of public works during a depression, however, is open to few serious objections, provided it is accompanied by a coordinated program of control which will make possible adequate financial reserves, appropriate engineering plans, and effective administrative facilities. Obstacles to such a program, of course, there are aplenty. The inertia, inefficiency, and corruption of American political officialdom, the diversity and complexity of our governmental taxing units, and many others come to mind at once. Nor would such a program act as a panacea for all the ills of either unemployment or the business cycle. It could not put any large percentage of the unemployed to work without resorting to "make-work" schemes involving colossal waste and extravagance in many ramifying forms; and it would, at best, be only one of many lines of attack upon the business cycle.

In spite of both obstacles and limitations, however, the long-range planning and control of public works seems definitely desirable and by no means impossible. A promising start is being made by various city and regional planning commissions and by a few governmental bureaus. Even though nothing else were accomplished, the effect of such planning and control upon the responsible public officials would be stimulating. But there is in addition the strong probability that it can be used as an important weapon in attacks upon both unemployment and the business cycle.

ELMO P. HOHMAN

Book Notices

Harvey, Richard Selden. RIGHTS OF THE MINORITY STOCKHOLDER AND OF THE RAILWAY SECURITY HOLDER. *New York: Baker, Voorhis & Company, 1929.*

As the title would suggest, this book is a discussion of the legal background of the rights of minority stockholders and the rights of the holder of railway securities. In discussing the first of these topics, the author presents a brief statement of the development of the modern business corporation and pictures the abuses of control and the oppression of minorities which may take place in such a business unit. Against this background the author discusses the means of redress which are available to the security holders, the powers of stockholders, and the duties of directors. The second section of the book applies the same type of anlysis to the problem of the rights of holders of railway securities. Following a brief and very inadequate historical treatment of the development of railroad regulation and the Transportation Act of 1920, the author comments upon some specific, unsound, financial practices encountered in reorganizations and leases and sales of properties. The conflict of interest between bankers and security holders and the use of the voting trust in railroad finance are touched upon. Finally, the protection which security holders have available and the means of obtaining that protection are discussed.

The work also contains about 150 pages of "precedents" or forms illustrating various types of legal action discussed in the book.

The variety of subjects treated in so short a work means that the treatment is of necessity brief and incomplete. No extended legal discussion is possible; each point must usually be dismissed with a summary and a citation. Over 400 cases are cited one or

more times, however, suggesting rather a broad background of legal precedent.

There are several reasons why this work might prove of interest to those concerned with the practice of finance, as well as with the legal background. In view of current talk of railroad consolidations the second section of the book seems particularly timely. Also the whole question of control and minority representation is part of the broad question of the separation of ownership and control—a question which has aroused considerable discussion of late. To such a reader, interested in the art of finance, the book may seem too legal, too narrow. There is a void of economic philosophy, a lack of financial background, an absence of an integrating point of view which would give the work greater interest to one interested in more than legal rights and obligations. The work lacks financial perspective. This comment is not to be taken as an indictment, for the book may fulfill its purposes well; such characteristics would seem to reduce, however, the list of readers to whom the work would appeal.

ROY L. REIERSON

REAL ESTATE PROBLEMS. 148 *Annals of the American Academy of Political and Social Science*. No. 237 (March, 1930).

The devotion of practically an entire number of the *Annals of the American Academy of Political and Social Science* to real estate problems will draw widespread attention to the effort that is being spent in this field and to the progress which has been made in it, as well as give courage to those who are devoting their time to research and instruction in the field of land economics and real estate.

The articles represent a wide variety of topics which emphasize desirably the scope and nature of the problems in this comparatively new field of investigation; the distribution of authors indicates the range of institutions and persons who are engaging, wholly or in part, in such investigation and instruction.

Much of the material contained in the volume will be found most useful as a summary of progress, rather than as specific contributions to the problems discussed. The most notable exception to this statement is the article by Professor Herbert D. Simpson which represents a factual approach to the much discussed but little understood problem of public improvements and the effects which they have on land values. This article contributes a valuable technique and important tentative conclusions. The conclusions, however, are stated with very careful reservations, so that their tentative nature is indicated and thus a tempting bid is made for further investigations of the sort. If the conclusions presented prove to be valid after further investigation, they will have far-reaching effects upon a number of practices now in common use, particularly those connected with the levying of special assessments against abutting property for presumed benefits accruing from public improvements.

Other noteworthy articles present new developments, such as the organization of the real estate securities exchange in New York, the development of professional societies in the real estate field in England, the development of land value insurance, the graded tax law in Pittsburgh, and the growing importance of public supervision of land uses.

The articles dealing with the question of the valuation of real estate present interesting material but are in some respects unsatisfactory, particularly the article by Mr. Pollock which represents a common failure to distinguish between the problem of estimating the value of a specific property and that of assessing all properties in a jurisdiction for taxation purposes. The effort to secure the adoption of a standard quantity of land as a basis for the formulation of judgment as to the value of all land in a jurisdiction may be commendable as it applies to assessment procedure; its usefulness in estimating the value of a particular property is questionable. Some inaccuracies of expression are also found in this article, such as "the sound market price for urban land is the unit foot."

Attention should also be called to the articles on a national land policy to conserve land values; the analysis of the tendency toward tenancy in cities, presented by Professor Wehrwein and Mr. Woodbury; and the discussion of the relationship between income and value in farms, by Mr. Wiecking of the Bureau of Agricultural Economics.

A monograph of 38 pages on commercial arbitration, by Professor Abersold of the Wharton School of Finance and Commerce, is appended to the volume.

ERNEST M. FISHER

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